DOCUMENT RESUME

ED 221 130 HE 015 478

AUTHOR	Pascarella, Ernest T.
TITLE	Validation of a Theoretical Model of College Dropouts.
SPONS AGENCY	National Inst. of Education (ED), Washington, DC.
PUB DATE	May 82
GRANT	NIE-G-81-0057
NOTE	78p.
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Academic Aspiration; Academic Persistence; *College Freshmen; *Commuter Colleges; Comparative Analysis; Dropout Attitudes; *Dropouts; Higher Education; *Institutional Characteristics; Liberal Arts; Models; Occupational Aspiration; On Campus Students; Private Colleges; *Residential Colleges; Social Adjustment; Student Adjustment; *Student Attrition; Student College Relationship; Student Participation; Two Year Colleges; Universities; Withdrawal (Education)
IDENTIFIERS	*Tinto (V)

ABSTRACT

The extent to which Tinto's model of college withdrawal has predictive validity in different types of postsecondary institutions was tested during the 1978-79 and 1979-80 academic years. Secondary analyses were conducted on a sample of 2,326 freshman students from 11 diverse institutions participating in project CHOICE (to better inform prospective students). The schools were residential universities, private liberal arts colleges, two-year commuter colleges, and four-year commuter institutions. The various measures of Tinto's concepts of social and academic involvement did explain modest but significant increments in the variance in freshman year voluntary persistence/withdrawal decisions, even when an extensive range of student background characteristics were considered. A number of measures of institutional involvement such as residence arrangement and participation in career counseling programs had direct positive effects on persistence and are amenable to administrative policies and planning. The relationships among the constructs of social/academic involvement, institutional commitment, and commitment to the goal of graduation and persistence were marked by more consistency with theoretical expectations in the residential and liberal art samples than in the two- or four-year commuter samples. The concept of social involvement had little salience for commuter students. Additional findings suggest that institutional persistence/withdrawal decisions during the freshman year are the result of a complex interaction of different influences. Appended materials include a bibliography, statistical tables of the findings, and a student involvement questionnaire. (Author/SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED221130

HE

Validation of a Theoretical Model of College Dropouts

(NIE-G-81-0057)

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Ernest T. Pascarella
Principal Investigator
University of Illinois at Chicago

NIE 015 420

Project Report submitted to the National Institute of Education, May, 1982

ABSTRACT

This study sought to test the predictive validity of a theoretical model of the college withdrawal process across four different types of post-secondary institutions. Secondary analyses were conducted on a sample of 2326 freshman students from eleven diverse institutions: residential universities, private liberal arts colleges, two-year commuter colleges and four-year commuter institutions.

Three major findings were yielded from the analyses:

1) The various measures of Tinto's concepts of social and academic involvement did explain modest but significant increments in the variance in freshman year voluntary persistence/withdrawal decisions, even when an extensive range of student background characteristics were taken into account. A number of measures of institutional involvement such as residence arrangement and participation in career counseling programs had direct positive effects on persistence and are amenable to administrative policies and planning.

2) The relationships among the constructs of social/academic involvement, institutional commitment, commitment to the goal of graduation and persistence was marked by more consistency with theoretical expectations in the residential and liberal arts samples than in the two or four-year commuter samples. Not surprisingly, the concept of social involvement had little salience for commuter students.

3) The addition to the prediction equation of cross-product terms which assessed the differential influence of various dimensions of social and academic involvement for different kinds of students led to substantial, and significant, increases in the explained variance in persistence/withdrawal decisions. Such a finding suggests that institutional persistence/withdrawal decisions during the freshman year are the result of a complex interaction of different influences. Simple main-effects analyses which have characterized previous attrition research may fail to capture this complexity.

INTRODUCTION

Student withdrawal from institutions of postsecondary education is a widespread phenomenon which, given projections of a shrinking population of prospective students in the 1980's and 1990's (Dresch, 1975; Carnegie Council, 1980), has received increasing attention from both a research and administrative planning perspective. While the current economic climate and the prospect of steady or declining enrollment in the near future highlight the present upsurge of interest in attrition, the process of student withdrawal from college has remained steady and consistent throughout the past forty years (Cope and Hannah, 1975; Iffert, 1958).

Most comprehensive reviews of the literature or investigations based on national samples indicate that the scope of student attrition is fairly broad. Summerskill (1962), for example, reviewed 35 different studies of student withdrawal conducted between 1913 and 1962 and concluded, not only that the median loss of students in four years is about 50%, but also that this rate had not changed appreciably over the 50 year period. More recently Astin (1975) using a national sample reported that 41.5% of the students initially enrolled in 1966 had not graduated and were nonenrolled 4 years later. Similar conclusions about the magnitude and consistency of student attrition rates have been made by Pantages and Creedon (1978). In short, while there is wide institutional variation, it would appear that the average institution can expect to eventually lose about 40% of an entering class through attrition (Carnegie Council, 1980). Attrition data for community college suggests that their loss of students is even higher (Nickens, 1976; Pezzullo, 1978).

Given the magnitude of the phenomenon it is not surprising that substantial research has focused on student persistence/withdrawal in post-secondary institutions. Reviews of this literature by Spady (1970), Tinto (1975) and Pantages and Creedon (1978), however, have suggested that it is essentially descriptive rather than theory based. In short, the vast majority of studies have searched for student or institutional variables significantly related to persistence (versus withdrawal) behavior with no conceptual model to guide inquiry. As a result there appears to be a wealth of statistically reliable, ex post facto associations which contribute little to a cumulative and parsimonious understanding of the process of persistence/withdrawal.

In an attempt to bring some coherence to the research on the college dropout, as well as providing a conceptual framework to guide future inquiry, Tinto (1975) has built on Spady's (1970) work to develop an explanatory, predictive theory of the persistence/withdrawal process which has as its core the concepts of academic and social integration in the institution. The theory is longitudinal and regards persistence primarly as a function of the quality of a student's interactions with the academic and social systems of the institution. Students come to a particular institution with a range of background traits (e.g., sex, secondary school performance, family background, personality orientations). These background traits influence, not only how the student will perform in college, but also how he or she will interact with, and subsequently become integrated into, an institution's social

and academic systems. Other things being equal, the greater the student's level of social and academic integration, the more likely he or she is to continue at that particular institution.

Because the Tinto model provides a parsimonious, explanatory framework for guiding inquiry aimed at understanding persistence/withdrawal behavior as a function of student - institutional fit, it is a particularly important contribution to the literature on attrition. Recently, a few studies have tested the predictive validity of the Tinto model (Baumgart and Johnson, 1977; Bean, 1980; Terenzini and Pascarella, 1977, 1978; Pascarella and Terenzini, 1977, 1979, 1980). While their results generally support the predictive utility of the model, these investigations suffer from a number of sampling and methodological problems which undermine their coherence as a body of knowledge increasing our understanding of student persistence in college. The most serious problem is that each of the investigations is based on a single institution sample with little cross-sample consistency in the operational definitions of the variables in the model. As a consequence, it is nearly impossible to determine if differences in results reflect inconsistent operational definitions of the model components, a lack of generalizable validity of the model across different samples, or simple differences in the pattern of factors influencing persistence in different institutions (Tinto, 1981).

A second, related problem is that nearly all investigations of the validity of the Tinto model have been conducted at large, four-year, residential institutions. As a result, little is known about the predictive validity of the model in two-year community colleges or predominantly commuter institutions; yet it may be in these institutions that attrition represents the largest relative burden on human, financial and intellectual resources.

Recently notable studies by Munro (1980, 1981) have tested the validity of the Tinto model with the National Longitudinal Sample of the High School Class of 1972. The results of these multi-institutional studies have given general support to Tinto's model. However, there is some question of the extent to which the variables from the NLS sample provide adequate operational definitions of Tinto's rather complex constructs of academic and social integration. Similarly, the analyses are based on pooled data and do not disaggregate by institutional type. Thus, it is difficult to determine if the results obtained are consistent for different kinds of institutions.

A final problem concerns the analytic procedures used in existing studies. With the exception of the single institution studies by Pascarella and Terenzini (1979) and Bean (1981), validations of the Tinto model have focused almost exclusively on the "main effects" influence of variables operationalizing academic and social integration. For example, they have tended to assess the associations between measures of peer relations and persistence for students in general, or in some investigations, men and women separately. Results of the Pascarella and Terenzini (1979) and Bean (1981) studies, however, suggest that analyses which assess the predictive validity of the Tinto model for students in general fail to capture the complex pattern of factors influencing different students' decisions to persist or withdraw. In their studies, substantial increases in the explanatory power of the model for both

sexes were realized when attempts were made to determine the specific patterns of social and academic involvement most important in positively influencing persistence for students with different background characteristics. Such findings suggest that the extent of influence of any particular pattern of social or academic involvement on persistence may depend to a significant degree on the particular characteristics and experiences of the students being considered. Analytical approaches focusing on the interaction of student traits and institutional experiences, however, are largely absent from the research literature on student persistence/ withdrawal.

The present study addressed these issues in a multiinstitutional validation of Tinto's model of college persistence/ withdrawal. Specifically the study sought answers to the following questions:

1. To what extent does the Tinto model have general predictive validity in different types of post-secondary institutions? (i.e., are the concepts of social and academic involvement useful in predicting subsequent freshman year persistence/withdrawal decisions in different types of institutions?)
2. To what extent is it possible to identify specific patterns of freshman year social and academic involvement which are particularly important in positively influencing persistence for different kinds of students in different kinds of institutions?
3. What are the variations in patterns of social and academic involvement for different kinds of students at different types of institutions?
4. To what extent do differences in students' levels of social and academic involvement account for differences in retention rate across different institution types?

METHODOLOGY

General Design

The general design of the study was longitudinal with data collected during the 1978-1979, and the 1979-1980 academic year. During April, 1979, 2410 full time freshman students from eleven institutions completed the Student Involvement Questionnaire (SIQ). The SIQ collected data on student commitment to complete college and student involvement in a variety of activities that Tinto (1975) has suggested as the dimensions of social and academic integration. (Relevant sections of the SIQ are shown in Appendix A.) Additional information on student demographic variables (e.g. sex, family background) and personal characteristics (e.g. secondary school achievement, personality orientations) were also obtained for the 2410 freshmen.

During the subsequent Fall of 1979, the participating colleges identified those respondents who re-enrolled for their sophomore year (persisters) and those who withdrew voluntarily. Within the sample, ten of the eleven institutions did not have an academic dismissal policy which would force students to leave school after their freshman year. In one institution where an academic dismissal policy is in force, only 5 percent of those who withdraw are asked to do so for academic reasons. This fact prevented the forming of academic dismissals as a separate group. Thus, the proposed investigation will focus on the prediction of freshman year persistence versus voluntary withdrawal.

While it might be argued that Tinto's model is intended to explain withdrawal during the second, third or fourth years of college as well as in the first year, evidence from Eckland (1964), Iffert (1958), Marsh (1966) and Pantages and Creedon (1978) indicates that voluntary withdrawal is heaviest at the end of the freshman year. From this evidence it was judged that analyses based on freshman students would provide a reasonable assessment of the predictive validity of the Tinto model.

Sample

The sample for the study consisted of first-time freshman students (entering in Fall 1978) randomly selected from freshman populations at eleven post-secondary institutions participating in Project CHOICE. (The three smallest of the eleven institutions included their entire freshman population in the study.) Project CHOICE, supported by the Fund for the Improvement of Post-Secondary Education, worked with colleges and universities to help them improve the information they provided to prospective students. Within the sample of eleven participating institutions, four could be classified as 4-year public or private, primarily residential, universities; three were 2-year, primarily commuter, community colleges; two were primarily 4-year commuter institutions and two could be classified as private, liberal arts colleges with a mix of residential and commuter students. (A list of participating institutions is shown in Appendix B) For all institutions only those students enrolled in degree granting programs and expecting to graduate with a bachelor's degree

(4-year institutions) or an associate degree (2-year institutions) were included in the sample.

The SIQ was distributed to samples of freshmen from each of the eleven participating institutions in early April, 1979. For eight institutions the questionnaire was distributed by campus mail, while for three schools the questionnaire was distributed to the selected sample in the residence halls. A follow-up mailing or distribution of the instrument to initial non-respondents was conducted in late April.

Subsequent to the follow-up mailing, useable responses to the SIQ survey instrument were obtained from 2326 students, representing an overall response rate of 35%. The distribution of withdrawals and persisters by institutional type is shown in Table 1. Chi-square goodness-of-fit tests indicated that the overall sample was representative of the population from which it was drawn with respect to sex. Data on student age was provided for only nine of the eleven colleges, and, of those, a statistically significant under - representation of older students (21 years and older) was found in five institutions. However, since the number of older freshmen expected in these institutions was quite small, the slight differences noted were judged to be unimportant.

Place Table 1 about here

Despite evidence of sample representativeness, the low response rate is an obvious limitation of the study. Similarly, while the eleven institutions in the sample are geographically distributed across the United States, it would be incorrect to consider them as a representative national sample. Granting these limitations, this data set still has the particular advantage, not only of being multi-institutional, but also having extensive measures aimed specifically at assessing the dimensions of students' academic and social involvement in college.

Variables

According to the Tinto model, academic and social integration consist of several basic components. Extent of academic integration is determined primarily by the student's academic performance and involvement in the academic/intellectual activities of the institution. Social integration is primarily a function of peer group involvement and interactions with faculty. While the model places interactions with peers and faculty in the domain of social integration, Tinto clearly suggests that, depending on their content, such interactions can also influence academic integration. Levels of social and academic integration lead to an additional component which the model terms "commitment." This component consists of commitments to the institution and to the goal of graduation.

The following variables were used to assess the concept of academic integration:

1. First semester freshman grade-point average
2. Expected grade-point average for the second semester the freshman

year.

3. Academic/Intellectual Activity academic work effort (hours studying per week) number of unassigned books read for pleasure and number of cultural events attended.
4. Honors Program Participation -- two items; honors seminars and accelerated classes (1 = yes; 2 = no).
5. Special Skills Program Participation -- three items; tutorial programs, reading skill classes, study skill classes (1 = yes, 2 = no).
6. Informal Contact with Faculty -- the frequency of non-classroom interactions with faculty during academic year of 10 minutes or more for three purposes: academic advising, discussion of career concerns and discussion of intellectual matters.
7. Peer Conversations: Academic Topics -- same as interaction with faculty
8. Career Planning Program Participation -- one item: (1 = yes, 2 = no).

The following variables were used to assess the concept of social integration:

1. Residential Status: (1 = living on-campus, 0 = living off-campus).
2. Average Number of Dates Each Month
3. Number of Best Friends on Campus
4. Participation in Organized Student Extracurricular Activities -- ten items" (e.g., hobbies or social clubs, residence hall activities, intramural athletics), 1 = yes, 0 = no.
5. Participation in Informal Social Activity (e.g., number of times going out with friends for refreshments).
6. Number of Weekends Spent On Campus Each Month
7. Friendships -- two items: "Is there a person you date regularly?" "Do you spend time with college friends on vacation?" (1 = yes, 2 = no).
8. Peer Conversations: Social/Personal Topics-- the frequency of non-classroom interactions with peers during academic year of 10 minutes or more for three purposes: discuss a campus or social issue, socialize informally, and discuss a personal problem.
9. Informal Contact with Faculty: Social/Personal Topics-- same as interactions with students plus a 3-item measure assessing frequency of contact with faculty to: 1) have dinner in faculty member's home, 2) go out for refreshments with faculty, 3) have a meal on campus with faculty.

Commitment to the institution and to the goal of graduation was measured by the following two scales (considered measures of both academic and social integration.

1. Institutional Commitment - "It is important for me to graduate from this college" (1 = extremely to 4 = not at all), "How sure are you that you made the right choice in attending this university?" (1 = definitely right choice to 5 = definitely wrong choice).
2. Commitment to Graduation -- one item: "It is important for ~~for~~ me to graduate from college" (1 = extremely to 4 = not at all).

In nearly all cases the social and academic involvement items, as well as those tapping institutional and goal commitment, were either suggested directly by the Tinto model or adopted from instruments employed in previous single-institutional validations of the model (e.g., Terenzini

and Pascarella, 1977, 1978; Pascarella and Terenzini, 1979).

A substantial body of research on college impact suggests that students' interactions with the college environment are not independent of their particular background traits and personality orientations (e.g., Astin, 1962, 1968, Centra and Rock, 1971; Rock, Centra and Linn, 1970; Thistlethwaite and Wheeler, 1966). Thus, an important issue in the study of retention, and Tinto's model, is the extent to which the assessment of differential levels of social and academic integration and institutional/goal commitment contribute to the prediction of persistence/withdrawal decisions when the influence of student background traits is taken into account.

This investigation controlled for the following student background characteristics suggested as potentially important influences on persistence/voluntary withdrawal decisions by various critical reviews of attrition research (Cope and Hannah, 1975; Pantages and Creedon, 1978; Spady, 1970; Tinto, 1975);

1. Sex (1 = female; 2 = male).
2. Age (1 = 18-20; to 6 = 55 or older; original data in these categories).
3. Secondary School Grades (1 = A, to 7 = C-)
4. Academic Major (Dummy Coded: Liberal Arts, Professional and Other).
5. Student Socioeconomic Status -- product of the average of mother's and father's formal education and the average of mother's and father's occupational level. (Occupational categories were coded to six levels consistent with the coding scheme of Trent and Medsker, 1968.)
6. Student Personality Orientations --the Affiliation Needs and Achievement Needs scales from Stern's (1970) Activities Index. The Affiliation Needs scale estimates the extent to which a person is group-centered, friendly and participative with others, while the Achivement Needs scale indicates an individual's enjoyment of surmounting obstacles and successfully completing tasks undertaken. (Scored in reverse so that low scores mean stronger levels of Affiliation and Achievement Needs than high scores.)

The dependent variable was freshman to sophomore year persistence versus voluntary withdrawal. Persistence was coded 1 while voluntary withdrawal was coded 2.

Statistial Analysis

Prior to any statistical analysis, each variable was inspected for extreme outlier cases. Inspection of the independent variables for outlier cases indicated a number of variables with extremely skewed distributions. Most of these were the ratio or "counts" variables, such as frequency of informal conversations with other students. In such cases a number of variable transformations were experimented with in an effort to reduce skewness and increase the normality of the distributions(Walberg and Rasher, 1976). In all cases of transformation, reciprocals (1/variable) gave the best approximations of normality and the strongest zero-order correlations with the dependent variable. In instances where zero was a possible value of the independent variable, a constant of 1.0 was added to avoid dividing by zero.

Because of the differences in institutional size and institutional response rates, the possibility existed that the pattern of associations found between measures of social and academic involvement and persistence/withdrawal decisions at larger institutions might dominate the results within each institutional category. Thus, a weighting algorithm was developed which weighted each case in a particular institution inversely to the representation of that institution within each of the four categories of institutions. (For example, if there were two institutions in a particular category with institution A having 200 cases and institution B having 100 cases, each case for institution A would be weighted 0.50 while each case for institution B would be weighted 1.00). The resultant effect on the analyses was to equate the contributions of each institution within a particular category.

Multiple regression analysis was the major analytical procedure employed. The dependent variable was freshman year persistence/voluntary withdrawal decisions. Independent variables were student background characteristics and the measures of social and academic integration, and commitment described above.

In order to address the questions of the study several different sets of analyses were conducted. To answer question 1 (concerning the general predictive validity of the Tinto model across different types of institutions) separate analyses were conducted for each type of institution: four-year residential universities, private liberal arts colleges, two-year community colleges, four-year commuter universities. Consistent with the Tinto model each analysis was carried out in an a priori, setwise manner with the set of student background characteristics entered first, the set of social involvement and academic involvement variables entered second, and the commitment variables entered third. Such an analysis permitted the assessment of the contribution of the social and academic involvement, and commitment variables to the explained variance in persistence/withdrawl decisions, with the influence of all variables entered on preceeding steps held constant.

To answer the second basic question of the study (concerning the interaction of student traits X levels of social and academic involvement) separate analyses were also conducted for each of the four institutional types. Setwise multiple regression analysis (dependent variable = persistence/voluntary withdrawal decisions) entered variable sets in the following order: 1) student background traits, 2) social involvement, academic involvement and commitment measures, and 3) a series of cross-product terms representing the interaction of each student background trait and each measure of social and academic involvement, and commitment. Separate analyses were carried out for each background trait.

To reduce the probability of type 1 errors (i.e., finding speciously significant interactions) individual significant interaction terms were interpreted as statistically reliable only if the following conditions existed (Pascarella and Terenzini, 1979): 1) the entire set of interaction terms made a significant ($p<.05$) contribution to the increase in R^2 (predicting persistence/withdrawal decisions), 2) the interaction term had a significant partial correlation with the criterion with the influence of all main-effects held constant, 3) the regression coefficient for the interaction term was also significant with all main-

effects and all other interaction terms in the equation. Similar preliminary analyses were carried out with cross-products of social and academic involvement items in order to determine if high levels of academic involvement tended to compensate for low levels of social involvement, and vice-versa. In all preliminary analyses investigating interaction terms, only significant interactions meeting all three of the above criteria were entered in the final equation.

To answer question 3 (concerning different patterns of social and academic involvement at different types of institutions) the data were pooled and institutional type was treated as the dependent variable. Four-group discriminant analysis, employing a setwise procedure, was used to test the significance of differences in the pattern of personal (background) characteristics and academic and social involvement across institutional types. In the setwise discriminant analysis, student background traits were entered first, followed by the social and academic involvement variables on step two, and the institutional and goal commitment measures on step three.

To determine whether different patterns of involvement/ integration exist for different kinds of students at different institutions, each involvement measure was regressed on: 1) student background traits, 2) a dummy variable representing institutional type, and 3) a set of cross-product terms representing the interaction of each student trait with institutional type. Individual significant interactions (crossproduct terms) were examined only if the three criteria for interactions discussed above were met.

Question 4 concerned the extent to which differences in students' levels of social and academic involvement accounted for differences in retention rate across institutional types. Analyses to address this question were based on pooled data. Setwise regression analysis (dependent variable = persistence/withdrawal decisions) was conducted with variables entered in the following order: 1) student background traits, 2) a dummy variable representing institutional type, 3) social and academic involvement and commitment measures. We anticipated differences in retention rate due to institutional type, even with institutional differences in student background traits held constant. Thus, there would be a significant R^2 increase associated with the set of dummy variable terms when they entered the equation. However, if differences in levels of student academic and social integration/involvement account for the differences in retention rate across institutional type, we would expect the institutional type dummy variables to become non-significant when the social and academic involvement variables are added to the equation. The latter variables, at the same time, should significantly increase the explained variance (R^2) in voluntary persistence/withdrawal decisions.

After conducting all preliminary analyses, a first draft of this report was reviewed by two consultants to the project: Dr. Russell Johnson, who initially collected the data and is familiar with the entire data base, and Dr. Patrick Terenzini, who is nationally recognized for his expertise in the methodological issues of research on student withdrawal from college. Their review and critique led to additional analyses which are incorporated in this report.

RESULTS

Question 1: (concerning the general predictive validity of the Tinto model across different types of institutions)

Table 2 presents the means, standard deviations and univariate F ratios for all main effects variables within each institutional type. Table 3 displays, within each institutional type, the partial correlations between each measure of social and academic involvement and freshman withdrawal with the influence of all background characteristics held constant. As the Table indicates, only two variables, goal commitment and institutional commitment, had significant, positive partial correlations with persistence across the different insitutional type samples. Only four other variables: expected second semester grade point average, frequency of informal contact with faculty: academic topics, extent of participation in organized extracurricular activity and frequency of informal contact with faculty: social/personal topics, had significant partial correlations with the criterion measure in at least two institutional samples.

Place Tables 2 and 3 about here

The finding that amount of informal contact with faculty is positively related to persistence is consistent, not only with theoretical expectations from Tinto's (1975) and Spady's (1970) explanatory models, but also with previous research by Pascarella and Terenzini (1977) and Terenzini and Pascarella (1977, 1978). (Note that frequency of contact with faculty was converted to a reciprocal, thus is reverse coded.) Interestingly, however, while the association is positive for the residential university and liberal arts institutions, it is generally negative for two-year commuter institutions. Similarly, informal conversations with students were negatively related to persistence for two-year commuter instituions.

Such a finding suggests that the influence on voluntary persistence/withdrawal decisions of major dimensions of Tinto's concepts of integration vary significantly by institutional type. To determine whether these notable variations in partial correlations indicated a significantly different pattern of informal involvement with faculty and peers across different types of institutions, an additonal analysis was conducted. With data from all institutions pooled, persistence/withdrawal decisions were regressed in order on: 1) student background characteristics, 2) a dummy coded variable representing institutional type, 3) a composite variable termed "interpersonal involvement" (which was a simple linear combination of frequency of contacts with faculty and students concerning both academic and social/personal topics and frequency of informal social activity), and 4) a series of cross product terms representing the instituional type X "interpersonal involvement" interaction. With all main effects held constant, the institutional type X "interpersonal involvement" interaction had an F-ratio of 8.61 with 3 and 2310 degrees of freedom ($p < .01$). Thus, it would appear that the observed differential influence on persistence of extent of interaction with faculty and peers is also statistically reliable.

Table 4 summarizes the results of the setwise multiple regression analyses. As the Table indicates, with the influence of background

characteristics held constant, the sets of academic/social integration and commitment variables were associated with a statistically significant increase in the explained variance in voluntary persistence/ withdrawal decisions regardless of institutional type. In all cases, however, the R^2 increase was modest, ranging from 13.0% to 18.4%. In three of the four samples the academic and social involvement measures were associated with a significant increase in R^2. (Only in the liberal arts institution sample was the R^2 increase due to the 17 social and academic involvement variables not significant.) In all four samples the R^2 increase associated with the addition of the institutional and goal commitment variables was statistically significant.

Place Table 4 about here

Table 5 displays the direct effect (unstandardized regression weight) of each main-effects variable on freshman year persistence/ withdrawal decisions. As the Table indicates, no one variable had a consistently signficant relationship with persistence/withdrawal decisions across all four institutional types. Indeed, Institutional Commitment was the only variable to have significant direct, positive effects on persistence for three institutional type samples. Commitment to the Goal of Graduation and Friendships (having a friend on campus who is dated regularly and spending time with friends on vacation) were both positively related to persistence in the residential university and two-year commuter institution samples.

Place Table 5 about here

In residential universities participation in special skills programs had a significant negative association with persistence, perhaps suggesting that on these four campuses participation in such programs has a remedial aspect which tends to draw the weakest and, therefore, most dropout-prone freshmen. On the other hand, participation in career planning or career counseling programs was positively associated with persistence for residential university freshmen. Similarly, with all other variables in the equation held constant, living on campus (vesus off-campus) was significantly and positively associated with freshman year persistence. (Recall that persistence is coded 1 and withdrawal is coded 2.) This latter finding is quite consistent with those reported by Chickering (1974) in his study of the differentital college experience of residential and commuter students. It further suggests that living on campus may have a direct, and unique influence on persistence, even when background characteristics and a wide range of other college involvement measures and commitments are taken into account.

The regression equation for two-year commuter institutions is interesting, if only for the fact that is is the only sample in which a background characteristic (the Affiliation Needs scale) had a significant regression coefficient with the dependent variable. Controlling for all other variables in the equation, freshman students who withdrew from two-year commuter institutions had significantly higher levels of affiliation needs than did persisters (note the Affiliation and Achievement Needs scales were scored in reverse). Consistent with this finding is the fact that students who withdrew had significantly higher levels of informal

contacts with student peers to discuss social/personal topics than did persisters.

Since the Tinto model would posit that extent of interaction with other students is positively associated with institutional persistence, the significant negative association found in the two-year commuter sample, when combined with the negative weight for affiliation needs, suggests that withdrawal from those institutions may be more a process of transferring to more interpersonally stimulating institutional environments than a lack of involvement in, or commitment to the institution. This is perhaps further indicated by the fact that the two-year commuter institution sample is the only one in which commitment to the institution did not have a significant, positive regression weight with persistence.

With the exception of Institutional Commitment, expected second semester achievement had the strongest, positive association with persistence in the four-year commuter institution sample. The academic achievement variables were unassociated with persistence/withdrawal decisions in other three institution samples. Aside from commitment to the institution and expected academic achievement, the only other variable significantly associated with persistence/withdrawal decisions was dating frequency. Students who withdrew voluntarily tended to date more frequently than did those who persisted.

As indicated in Table 5, the associations between persistence and the individual measures of social and academic integration appear to have considerable variation in direction and pattern, both within and between institutional samples. Thus, it is difficult to determine from the preceeding analyses the nature of the composite influence of high levels of social and academic involvement on persistence. Similarly, the Tinto model also suggests that the individual dimensions of academic and social involvement have direct effects on institutional and goal commitment (academic involvement most directly influencing commitment to the goal of graduation and social involvement most directly influencing commitment to the institution.)

These two additional aspects of the Tinto model were investigated in a further set of regression analyses. In this set of analyses composite measures of academic and social involvement were used in the prediction of freshman year persistence, institutional commitment and goal commitment. The composite measures were constructed in two steps. First, each individual variable (8 for academic and 9 for social involvement) was standardized to give all variables the same metric. (A constant of 10 was added to eliminate negative numbers.) Next the variables were recoded (in terms of sign) and summed such that high levels of overall academic and social involvement would have positive associations with persistence (recall: persistence coded 1, withdrawal coded 2).

The results of these additional regression analyses are summarized in Table 6. As the Table indicates, the influence of the composite measures of academic and social involvement on all three dependent measures was quite modest. The results in the residential university and liberal arts samples seemed generally, though not totally, consistent with Tinto's theoretical expectations. In both samples the two measures of academic

and social integration were associated with significant increases in the explained variance in persistence/withdrawal decisions. However, only social involvement had a significant unique association with persistence. Similarly, in both samples only social involvement was significantly associated with goal commitment, while both involvement measures had significant positive association with goal commitment in the residential sample.

Place Table 6 about here

The results for the two- and four-year commuter institution samples were considerably less consistent with Tinto's model. In neither commuter sample were the two involvement measures significantly associated with persistence. Perhaps even more notable, however, was the fact that, while the social involvement measure was generally unassociated with institutional commitment, academic involvement had significant positive associations with institutional commitment in both samples.

It would appear from these additional analyses that overall social involvement has a somewhat greater positive influence on persistence for residential institution students than does overall academic involvement. This is inconsistent with the results of Terenzini and Pascarella (1978) and Munro (1981) who found that academic integration was a somewhat stronger predictor of persistence than social integration. One possible explanation for these conflicting results is that both the Terenzini and Pascarella (1978) and Munro (1981) studies included measures of satisfaction with academic and social aspects of college in their operational definitions of academic and social integration. Thus, there was a strong qualitative dimension to their conceptualization of the Tinto constructs. In contrast, the present study defined the Tinto constructs largely in terms of extent of involvement in both the academic and social systems of an institution.

Question 2: (concerning the interaction of student traits X levels of social and academic involvement)

A re-examination of Table 4 indicates that selected interaction terms, which met the three criteria for significant interactions outlined in the statistical analysis section, were associated with statistically significant increases in R^2 in three of the four institution samples. Notable was the fact that the R^2 increases associated with the sets of interactions were substantial relative to the variance explained by the total set of student involvement and commitment variables. The 10.3% increase in overall R^2 for the residential university sample represented a 63.2% improvement in explained variance over the R^2 (16.3%) due to the involvement and commitment variables, and was 35.3% of the explained variance (Total R^2). Similarly, the 8.9% R^2 increase associated with the interactions in the liberal arts sample was a 68.5% improvement over the variance explained by the involvement and commitment variables, and represented 33.6% of the explained variance. The relative R^2 improvement due to the interactions in the two year commuter sample was not as pronounced, but still represented nearly 20% (19.3) of the explained variance.

While there were individual interaction terms that were significant in the four-year commuter instituion sample, they each failed to meet the criterion of the entire set of interaction terms being associated with a significant increase in R^2. Thus, these specific interactions were judged to be the result of fortuitous sampling error and were not interpreted substantively.

Table 7 displays the significant interactions and the equations for those interactions for each institutional sample. Because of subtantial colinearity among the interaction terms, not all individual interactions entered in the final set were significant with the influence of all main effects and all other interactions held constant.

Place Table 7 about here

For the residential university sample, 13 of the final 20 interaction terms were statistically significant. Equations numbered 1 - 5 in the Table describe interactions between student background traits and various measures of social or academic involvement. Interactions 1 and 2 could be described as "compensatory." That is, both involvement measures, Academic/Intellectual Activity and Residing on Campus, had their strongest positive relationship with persistence for students who were at the relatively lowest levels of Socioeconomic Status or Achievement Needs, respectively. As level of Socioeconomic Status or Achievement increased, the magnitude of the positive influence on persistence of involvement in academic/intellectual activity and residing on campus tended to decrease. (The nature of each interaction can be varified by substituting arbitrary high and low values for each variable, e.g., $\pm$ one or two standard deviations from Table 2, in the equations of Table 7 and plotting the points that result.)

Interactions 3, 4 and 5 for the residential university sample are somewhat less consistent. Participation in special skills programs had its most important positive influence on persistence for liberal arts (versus applied or professional) majors, while friendships were most important for the persistence of non-liberal arts majors. Frequency of dating had its most important negative impact on persistence for students with the highest levels of pre-college academic achievement. As pre-college academic achievement decreased, the negative influence of dating frequency on persistence became less important.

Interactions 6-11 for the residential university sample concerned measures of social and academic involvement, and could be characterized as compensatory in nature. In interactions 6 and 7 commitment to the institution compensated for low commitment to graduation and few friends on campus. That is, institutional commitment had its strongest positive influence on persistence for students with low commitment to the goal of graduation and with few friends on campus. Level of institutional commitment was less important as an influence on persistence for students with high scores on these two variables. A similar interaction (8) suggested that in terms of positive influence on persistence, involvement in informal social activity with peers was most important for students with low levels of commitment to the goal of graduation.

Interactions 9-11 represent a somewhat different pattern in that the variables involved are mutually compensatory. For example, institutional commitment (interactions 9 and 10) had its most important positive influence on persistence for students with low levels of academic achievement and low involvement in organized extracurricular activities. Conversely, both academic achievement and extracurricular involvement had their strongest positive associations with persistence for students with low commitment to the institution. A conceptually similar, mutually compensatory interaction was found for involvement in informal social activity with peers and frequency of informal contact with faculty to discuss academic or intellectual issues. This latter interaction, not only supports Tinto's hypothesis that high levels of social involvement (i.e., informal social interaction with peers) may compensate for low levels of academic involvement (i.e., faculty contact to discuss academic topics) and vice versa, but is also consistent with previous findings by Pascarella and Terenzini (1979).

A somewhat different pattern was found in interactions 12 and 13 for the residential university sample. Both interactions involved extent of participation in honors programs and could be classified as accentuating. In each interaction participation in honors-type programs had its strongest positive association with persistence, either for students with a high commitment to the institution (interaction 12), or for students with frequent contacts with peers focusing on social/personal topics (interaction 13). Honors program participation was less important a factor in the persistence of students who were low on those two measures.

For the liberal arts college sample only 2 of the 7 interactions entered in the final regression model were significant with the influence of all main effects and all other interactions held constant. Interaction 14 was generally compensatory, with commitment to graduation having its strongest positive influence on persistence for students with relatively low levels of commitment to the instituion. As commitment to the institution increased, commitment to graduation became less important as a factor in persistence. Interaction 15 suggested that frequency of interactions with peers to discuss academic topics had a significantly stronger positive influence on persistence for students majoring in the liberal arts than for students majoring in pre-professional or applied fields.

Finally, for the two-year commuter institution sample, 2 of the 5 interactions entered in the final regression model were significant. Interaction 16 suggested that level of institutional commitment was most positively related to persistence for students from relatively high socioeconomic status backgrounds. As SES level dropped, commitment to the institution became less important as a variable influencing persistence/withdrawal decisions in the two-year commuter sample. Interaction 17 indicated that level of goal commitment had a significantly stronger positive association with persistence for women than for men. This was the only significant interaction effect involving sex in the entire set of analyses. This perhaps suggests that the influence on persistence of most involvement and commitment variables, at least as they are measured in this study, is essentially the same for both sexes.

It is perhaps also worth noting the absence of significant interactions between student age and any of the involvement or commitment variables. As with student sex this suggests that the patterns of involvement and commitment summarized in Table 5 are generally independent of student age. Thus, although there may be some underrepresentation of older students in the overall sample, this fact would appear to have little consequence for the generalizability of the findings.

An additional set of interaction terms was added to the equations predicting persistence with composite measures of academic and social involvement. Each of the composite involvement measures was cross-multiplied with the other, and with student background characteristics. Only the set of interaction terms in the residential university sample met the criteria for interactions previously specified. One interaction (liberal arts major X level of composite social involvement) was significant ($p < .05$) with all main effects and all other interactions held constant. The regression equation for the interaction was: .363 (liberal arts major) + .046 (composite social involvement) -.019 (liberal arts major X composite social involvement). The nature of the interaction suggested that level of overall social involvement had its strongest positive relationship with persistence for non-liberal arts majors.

Question 3: (concerning variations in patterns of social and academic involvement at different kinds of institutions)

The discriminant analysis of background characteristics, academic and social involvement, and commitment across institutional types yielded three significant functions ($p \leq .001$). These functions are summarized in Table 8. The first function had a canonical R of .55, which explained 31 percent of the variation among institutional types. Primary discrimination was between two-year colleges and universities. Examination of the standardized discriminant function coefficients indicates that the primary discriminators are SES and variables describing social integration. Community college students come from lower SES backgrounds, report that more of their friends also attend the same college, and tend to have somewhat more informal social contact with faculty than do university students. However, community college students participate in fewer organized extracurricular activities, they have less informal contact with other students and participate in fewer informal social activities than university students. Despite this, two year college students have more dates than university students, suggesting perhaps that while community college students have an active social life, it tends not to center around campus sponsored or campus based activities. Community college students report a higher level of institutional commitment; university students report a higher level of goal commitment.

Place Table 8 about here

The second function explained an additional eight percent of the variation among institutional types ($R = .281$). Primary discrimination was between liberal arts and four-year commuter colleges, with two-year

colleges more similar to the four-year commuter institutions. Liberal arts students tended to be higher than four-year college students on measures of both social and academic integration. Specifically;, liberal arts college students were more apt to be older, male, be majoring in liberal arts or applied studies. They had a higher achievement orientation and expected a higher second semester gpa than four-year commuter college students. Liberal arts college students date more and participate in more informal campus social activities. They also report more informal contact with faculty on both social and academic issues. Four-year commuter college students tending to be younger and female, and reported a higher high school gpa. Though they appeared to be less socially involved in campus activities, they reported that more of their best friends attend the same college than did the liberal arts college students. Additionally, while reporting less contact with either faculty or students on academic matters, the four-year commuter college students did report a higher level of participation in academic/intellectual activities (outside reading, cultural events, studying). Students in the liberal arts samples reported a substantially greater rate of participation in honors programs while those in the four-year commuter colleges had a notably higher rate of participation in special skills programs. While students in these two types of colleges differed little in their institutional commitment, students in four-year commuter institutions had a higher commitment to gradution.

The third function explained an additional seven percent of the variance ($R = .259$). Primary separation of groups was between four-year and two-year institutions. Universities, on this dimension, were closer to two-year colleges while liberal arts colleges were closer to four-year commuter institutions. In comparison to students enrolled in four-year and liberal arts colleges, students in two year colleges and universities tended to be older, female, have a higher high school gpa and expect a higher gpa for second semester, and be more apt to be majoring in liberal arts or applied studies. They also reported more informal social contact with faculty, more participation in organized extracurricular activities, and more participation in informal social activities. Two-year college and university students reported more involvement in intellectual/academic activities and participated more in special skills and career planning programs. Liberal arts and four-year college students had a higher affiliation need and had more informal contact with faculty on academic matters and participated more in honors programs. Liberal arts and four-year college students had a higher commitment to graduation, though two-year college students tended to report a higher commitment to the institution.

The results, overall, indicate that patterns of student integration do differ significantly across institutional types, even after differences in personal, background characteristics have been removed.

An examination of Table 9 indicates five academic and social integration variables for which the overall set of interaction terms was significant and which increased the explained variance by more than two percent (Table 9). The interaction terms associated with four of those interaction measures contributed to a significant increase in R^2. These R^2 increases were frequently substantial relative to the variance explained by the main effects. The specific interaction terms that met all the criteria for significance outlined earlier are summarized in

Table 10, along with the slope of the regression equation associated with each institutional type. Table 10, then, reports how personal characteristics are related to social and academic integration differently across institutional types after all systematic differences in main effects (personal charcteristics and institutional differences) have been removed.

Place Tables 9 and 10 about here

Examination of the significant interaction terms (Table 10) indicates that students' personal characteristics are more often differentially related to social than to academic integration across institutional types. (The notable exception within the academic integration measures was first semester gpa.) In particular the influence of age on social integration differed by institutional type. Younger students had the fewest conversations with peers and the least participation in informal social activities when they were in four-year commuter colleges. They engaged in the greatest number of peer conversations and informal social activities when in a liberal arts or university setting. Older students, on the other hand, tended to have more conversations with faculty in a community college setting, more conversations with peers and participation in informal social activities in the four-year commuter college setting.

Students from low SES backgrounds tended to have the most informal social contact with faculty in the four-year commuter college setting; high SES students tended to have the most contact in university settings. This relationship may serve to compensate for the influence of age in student-faculty contact. For example, low SES students in university settings are apt to have more contact with faculty if the students are older. Coming from a low SES background might offset the influence of a student being younger in predicting the likelihood of student- faculty social contact in a four-year commuter college.

Students majoring in applied areas of study had the most conversations with peers when they were in four-year commuter colleges, the fewest when in liberal arts colleges. Similarly, high levels of achievement need were related to more conversations with peers in two-year and liberal arts college settings. Again, these factors might serve to compensate for each other. For example, a high achievement need might result in a liberal arts college student majoring in an applied area of study to engage in more conversations with peers.

Students with high affiliation needs were most apt to participate in informal social activities on campus if they were in two-year or four-year commuter institutions, least apt to in a predominantly residential college or university. High affiliation needs, then may compensate for age. As mentioned earlier, younger students engaged in more informal social activities in a residential college or university setting. On the other hand, low affiliation needs in older students in a liberal arts college environment may work together to accentuate a low level of social integration. If that student also is majoring in an applied area, the problem is further accentuated.

Liberal arts majors reported the highest first semester gpa's when they were enrolled in two year colleges, they reported the lowest when in a liberal arts college setting. One explanation might be that the liberal arts majors in community colleges tend to be those students who hope to eventually transfer to a four-year college and who, as a consequence, place particular emphasis on earning high grades in order to get admitted elsewhere.

Question 4: (concerning the extent to which differences in students' levels of social and academic involvement accounted for differences in retention rate across institutional types

Table 11 summarizes the regression analyses conducted to address question 4 of the project. As the Table indicates, with differences in student background traits held constant the set of dummy variables representing institutional type explained a small (.01857) but statistically reliable portion of variance in persistence/withdrawal decisions. Similarly with both background traits and institutional type taken into account measures of involvement and commitment explained an additional significant increment (.12250) of variance in persistence/withdrawal behavior. However, as further indicated in Table 11, the contribution of the institutional type dummy variables remained significant even when the involvement and commitment variables were also included in the equation (unique R^2 contribution).

Thus, while variations in involvement and commitments explain a portion of persistence/withdrawal behavior consistent with the results of other multi-institutional studies (e.g. Munro, 1981), they do not totally account for institutional differences in persistence rates. Thus differences in institutional involvement and commitment do not totally explain why some types of institutions have higher persistence rates than others. Such differential persistence rates, then, may be attributable to factors other than just the extent to which a student becomes involved in the social and academic systems of an institution. Differences in the kinds of students enrolled (such differences being manifest along different dimensions than those measured in this study) may be important factors in accounting for varying persistence/withdrawal rates.

Additional Analyses

Results of analyses to answer question 1 (concerning the general predictive validity of the Tinto model across institutional types) indicated that institutional commitment and commitment to the goal of graduation were the most consistent predictors of persistence. Thus, if these variables have the most consistent direct effects on persistence, an important issue concerns those dimensions of academic and social involvement which influence institutional and goal commitment in different institutions. To address these issues an additional series of regression analyses was conducted for each institutional type with institutional and goal commitment as the dependent measures. The independent variables were student background characteristics and the academic and social integration measures.

Table 12 presents the partial correlations for each academic/social integration measure with the influence of student background

characteristics held constant. Table 13 presents the results of the separate regression analyses for each institional type.

Place Tables and 12 and 13 about here

As shown in Table 13 the total R^2s for all analyses were significant at $p < .05$. For the residential university sample five measures of social and academic involvement had significant regression weights with either institutional or goal commitment. Expected second semester G.P.A., participation in honors programs, dating frequency, number of friends on campus and number of weekends spent on campus were all positively and significantly associated with institutional commitment. Expected second semester G.P.A., participation in special skills programs, living on campus, amount of informal social activity and number of weekends spent on campus each had significant positive regression coefficients with commitment to the goal of graduation.

In the liberal arts and two-year commuter samples only two social/academic integration variables had significant regression weights with the commitment measures. In the liberal arts sample frequency of faculty contact to discuss academic topics and friendships had significant, positive associations with institutional commitment, while frequency of faculty contact (academic topics) and informal social activity had positive regression weights with goal commitment. In the two-year commuter sample expected second-semester G.P.A. and participation in honors programs were significantly and positively associated with institutional commitment. Academic, intellectual activity was positively associated with goal commitment, while informal social activity had a negative regression weight.

In the four-year commuter sample number of weekends spent on campus was positively associated with institutional commitment while expected second semester academic achievement was significantly associated with commitment to the goal of graduation.

CONCLUSIONS AND DISCUSSION

Question 1: (concerning the general predictive validity of the Tinto model across different types of institutions

If one considers the evidence strictly from the perspective of the residential university and liberal arts college samples, the findings are generally consistent, both with the theoretical expectations of the Tinto model, and previous research focusing on the predictive validity of the model. With differences in background characteristics and personality orientations held constant, freshman persisters (versus voluntary withdrawals) in both residential university and liberal arts samples were significantly more involved in non-classroom interaction with faculty members focusing on both intellectual/academic and social/personal topics. The latter finding is consistent with previous evidence reported by Pascarella and Terenzini (1977), Rossmann (1967), Spady (1971), and Terenzini and Pascarella (1977) concerning the influence of informal contact with faculty on freshman year persistence.

The pattern of freshman persisters being more involved in the life of the institution than voluntary withdrawals was even more pronounced at residential institutions. With background traits held constant, residential university persisters (versus withdrawals) were more likely to live on campus, to spend more weekends on campus and to be involved in more informal social activity with peers.

If the general pattern that emerges from the residential university and liberal arts samples is one of persisters being more involved and integrated into the social/interpersonal fabric of the institution than withdrawals, a notably different pattern emerges when the two-year commuter sample is considered. With background traits and personality orientations held constant, persisters in the two-year commuter sample had significantly less informal contact with both faculty and peers than did the voluntary withdrawals. (For the four-year commuter sample, individual dimensions of social involvement or integration were only weakly associated with persistence/withdrawal decisions.)

This pattern would seem to run counter to intuition as well as to the theoretical expectations of Tinto's model. However, it may simply reflect the fact that withdrawal from two-year commuter colleges is sometimes a matter of transfer to more traditional four-year, residential institutions rather than simply the result of low levels of academic or social integration. Such institutions, particularly if they are residential, may provide substantially greater opportunities for non-classroom interaction with both faculty and other students than are afforded in two-year commuter colleges. Consistent with this conclusion, perhaps, is the fact that voluntary withdrawals from the two-year college sample had significantly higher levels of affiliation needs than did persisters. Furthermore, as might be expected, level of affiliation needs had substantial positive correlations, not only with frequency of informal contact with faculty, but also with frequency of informal contact with peers to discuss academic/intellectual and social/personal topics. (The correlations ranged from .18 and .26, and were all significant at $p < .05$).

At first glance the above differences in patterns of interactions with faculty and peers suggest a significant level of interpersonal involvement X institutional type interaction in the Tinto model. One is tempted to conclude that the influence on persistence of a major component of Tinto's model (extent of informal interaction with faculty and other students) varies significantly, and perhaps even in direction, across different institutional types. Such a conclusion, however, may not be justified given the fact that for the two-year institution the dependent variable may reflect substantial transfer, as well as withdrawal behavior. Unfortunately, it was not possible to separate these two categories in the CHOICE data. Had it been possible, it is entirely likely that the findings for persisters versus those withdrawing completely (rather than transfering) would have been more consistent with Tinto's theoretical expectations.

Results of the setwise multiple regression analyses indicated that the R2 increase due to the set of involvement and commitment variables varied from 13.0% to 18.4%. These results seem quite consistent with those reported in other multi-institutional validations of the Tinto model (e.g., Munro, 1981). Only a very few of the involvement or commitment

variables had a unique or direct influence on voluntary persistence/withdrawal decisions, when the influence of background characteristics and all other involvement or commitment measures was taken into account. Of these, institutional commitment had the most consistent positive influence on persistence across samples. Only in the two-year commuter institution sample did institutional commitment fail to have a significant positive regression weight with persistence. This perhaps suggests that degree of commitment to the institution plays a significantly less important role in the persistence/withdrawal decisions of two-year commuter students than of students in four-year institutions.

In terms of identifying potentially manipulable variables which have direct, unique effects on voluntary persistence/withdrawal decisions, the results of the main-effects multiple regression analyses (Table 5) are generally disappointing. Only in the residential university sample were variables found with significant positive regression weights with freshman persistence which are also potentially manipulable: participation in career counseling programs and residing on-campus (versus living off-campus).

Chickering (1969) has argued that forming a sense of "career identity" is a significant developmental task for undergraduate students. The findings of this study suggest, further, that providing institutionally sponsored programs which may assist students in addressing this important developmental task is a potentially significant means by which a student's level of institutional integration may be enhanced.

Given Chickering's (1974) finding that residential students are significantly more involved in the intellectual, social and cultural life of an institution than are commuters, the present finding that living on campus has a unique, positive association with persistence is perhaps not surprising. In the primarily residential university sample, residing on campus may, in fact, function to some extent as a proxy variable for level of social and academic involvement. For example, residing on campus had correlations of .18 and .32 with participation in extracurricular programs and extent of informal social activity with peers, respectively.

The fact that residential students were significantly more likely to persist than commuters, even with differences in their levels of involvement and commitment held constant, however, suggests that living on campus may have a positive influence on persistence not totally explainable by the higher levels of social or academic involvement linked with residential living. Just what influence residential living may contribute beyond the extent to which it fosters increased participation in the social or academic systems of the institition is not clear from the present data. (One possible explanation, however, is that the measures employed to assess social and academic involvement may not adequately tap Tinto's constructs.) Nevertheless, it would seem that residential living (in its various forms) is a potentially powerful mechanism whereby universities may be able to positively influence not only levels of involvement in the social and cultural life of the institution, but also persistence at the institution.

Analyses conducted to investigate the influence of high levels of overall academic and social involvement on persistence, institutional

commitment and commitment to the goal of graduation suggested some interesting patterns of differences across institutional types. Not surprisingly, perhaps, level of composite social involvement had a somewhat stronger positive influence on both institutional commitment and persistence for the residential university and liberal arts samples than for the computer institution samples. Indeed, in the commuter samples composite level of social involvement was not significantly related to persistence or either of the commitment measures.

Such a finding perhaps simply reflects the fact that commuter institutions may provide significantly fewer facilities and opportunities for social/interpersonal involvement than do residential institutions (Chickering, 1974). In the present study this is suggested by a tendency for the combined residential university and liberal arts samples to have significantly higher ($p < .01$) scores on the composite social involvement scale than the combined commuter institution samples, even when differences in student background characteristics are taken into account. To the extent that significantly fewer opportunities for such involvement exist at commuter institutions, there may be less of a likelihood that differences in overall social involvement are of sufficient magnitude to influence commitment to the institution and, thereby persistence.

Conversely, composite academic involvement (though not significantly associated with persistence in any sample) had significant association with institutional commitment in both the two- and four-year commuter samples, but not the residential university or liberal arts samples. This finding for the commuter institutions is seemingly at odds with Tinto's theoretical expectation that institutional commitment is most directly influenced by social integration while academic integration most directly influences commitment to graduation. It should be pointed out, however, that the composite academic involvement scale also included measures of a student's informal interactions with faculty and student peers focusing on academic and career oriented topics. Thus, in contrast to students attending residential or liberal arts colleges, social interaction may positively influence institutional commitment for commuter student only if it tends to focus on their immediate academic or vocational interests. Consistent with such a conclusion, perhaps, is the fact that the commuter institutions tended to have a significantly ($p < .001$) greater percentage of students majoring in applied or preprofessional fields (68.6%) than did the combined residential university and liberal arts samples (60.3%).

In the residential and liberal arts institutions academic involvement was, as hypothesized by Tinto, most consistently associated with commitment to the goal of graduation. Indeed, the ways in which both commposite involvement measures appeared to influence commitment and persistence variables was more congruent with Tinto's model in the six residential and liberal arts institutions than in the five commuter schools.

Question 2: (concerning the interaction of student traits X levels of social and academic involvement

Perhaps the most interesting and important results of this study are the findings which suggest that the influence on persistence of individual involvement and commitment variables is not independent of

student background characteristics or of other social and academic experiences during the freshman year. The addition to the prediction equation of cross-product terms which assessed the differential influence of various dimensions of social and academic integration increased the explained variance 10.3% for the residential university sample, 8.9% for the liberal arts samples and 5.2% for the two-year commuter sample. For the residential university and liberal arts samples this represented over a third of the total explained variance, and approximately two-thirds of that explained by the individual involvement and commitment variables.

These results are generally consistent with previous single institution validations of the Tinto model by Bean (1981) and Pascarella and Terenzini (1979). They clearly suggest that institutional persistence/ withdrawal decisions during the freshman year are the result of a complex interaction of different influences. Attempting to fully understand this complexity with the simple main-effects or additive model may conceal nearly as much as it reveals. In short, future investigations which attempt to validate the Tinto model on either single or multiple institutional samples may well need to consider interactions among various components of the model if they are to fully capture what may be a particularly complex pattern of social-psychological relationships.

The most consistent pattern of interaction effects was found in the residential university sample. Eight of 13 significant interactions could be generally described as compensatory. Residing on campus and involvement in academic/intellectual activities, for example, had their most pronounced, positive influence on persistence for students at the lowest levels of affiliation needs and socioeconomic status, respectively. As the levels of these last two variables increased, living on campus and involvement in academic/intellectual activities, respectively, became less important considerations in voluntary persistence/withdrawal decisions.

A similar pattern was found for six interactions among different measures of involvement and commitment. Of those, perhaps the most interesting in terms of potentially "influenceable" variables were the interactions involving relationships with peers and faculty. Two general measures of social involvement with peers, participation in extracurricular activity and extent of informal social activity with peers, had their strongest, positive influence on persistence for students at the relatively lowest levels of commitment to the institution and commitment to the goal of graduation, respectively. Thus, it would appear that, in terms of positive influence on persistence, extensive social interaction with peers during the freshman year tended to compensate for both low levels of commitment to the institution and to the goal of college graduation.

Similarly it would appear that high levels of social integration (as indicated by extent of informal social interaction with peers) tended to compensate for low levels of academic integration (as indicated by extent of informal contact with faculty focusing on academic/intellectual issues), and vice versa. This latter finding, in particular, replicated the earlier findings of Pascarella and Terenzini (1979) and provides reasonably clear support for Tinto's hypothesis of a mutually compensatory relationship between social and academic integration.

If a student's levels of involvement with peers and faculty are important compensatory influences on freshman persistence, then an important consideration would be those institutional programs and policies which incrase the likelihood that such involvement will occur. It would seem that such policies fall largely within the domain of the student affairs staff. How student affairs professionals fashion the various activities and programs they administer to increase the likelihood of informal interaction with peers and faculty may, thus, have an important influence on the persistence of students who might otherwise withdraw from the institution.

While informal relationships with peers and faculty may have a significant compensatory influence on freshman persistence in the residential institution sample, an accentuating influence was indicated for interactions involving participation in academic honors programs. Participation in such programs was most important in positively influencing the persistence of students with relatively high levels of institutional commitment. Thus, while participation in academic honors programs was not significantly associated with persistence for students in general, it nevertheless became an important factor which even further reinforced the likelihood of persistence for those students with high levels of institutional commitment.

Question 3: (concerning variations in patterns of social and academic involvement at different kinds of institutions

After controlling for differences in student characteristics, patterns of student involvement in the academic and social life of their college differed significantly by institutional type. The three functions together explained 46 percent, or nearly half, of the variation among college types. In general, the first function arrayed institutional types by institutional size--two year college to university. As college size increased, students' social life tended to center more on campus sponsored and/or campus based social activities. This may reflect the greater number of social opportunities available in large institutions.

While involvement in campus social activities increased with institutional size, informal contact with faculty focusing on either social or academic matters tended to decrease. This negative relationship is consistent with previous findings by Wilson (1975), Eddy (1959), and Jacob (1957) (see Pascarella, 1980). In part, this pattern may reflect the assignment of teaching responsibilities in universities; freshmen may be taught primarily by graduate assistants and encounter faculty only in large lecture situations. Chickering (1969) suggests the low level of contact is a matter of the number of persons for a given setting exceeding the opportunities for active interpersonal participation.

The second function distinguished commuter from predominantly non-commuter institutions. Students in residential institutions tended to be higher in both academic and social integration. While commuter students (particularly in four-year commuter colleges) appeared to be less involved in campus based academic activities, they were not necessarily less interested in intellectual or academic activities, as evidenced by the extent of their participation in such activities. Integration, on this function, appears to be tied to physical proximity, e.g.,

opportunity to participate.

The third dimension distinguished four-year colleges (liberal arts and commuter) from other types of institutions. Four-year college students participated more in the social life of their college -- more conversations with peers, more social contact with facutly. Moreover, they had more informal contact with faculty on academic matters than their counterparts in two year institutions.

Across the three functions, the primary differences among institutions was the extent of student participation in the social aspects of campus life. The magnitude of the univariate F's at the conclusion of the analysis indicates that the greater importance of social integration is more than a matter of that variable set having been entered prior to the academic set. Overall, two-year college students appeared to be least socially integrated, university students most socially integrated, with four-year commuter college students falling in between (more socially integrated than two-year students, less than university students). As expected from Tinto (1975), high levels of social integration were paired with greater institutional commitment, lower levels with greater commitment to graduation.

After personal characteristics and differences in social integration were removed from the analysis, students differed significantly in their level of academic integration across institutional types. Liberal arts college students were most involved in the academic life of their institution, four-year commuter college students least involved, with two-year college students more similar to four-year commuter college students.

The magnitude of the differences in student integration across institutional types in combination with the personal characteristics associated with particular dimensions of integration have important implications for educational planning. Several of the findings are already well known to college administrators on a more intuitive level. First, the findings highlight the potential plight of students who differ in some important way from the dominant clientele of their institution, for example, the person who commutes from home to a primarily residential college or the person from a particularly low SES background enrolled in a liberal arts college. These individuals may experience difficulty engaging in the social life of the college or finding much personal satisfaction in the dominant social environment of their institution. Administrators may need to develop special opportunities and programs for such individuals.

Closely related are the implications this study has for a college's responses to incoming transfer students, particularly as they transfer across institutional types. The predominant pattern of social and academic integration that characterizes a community college, for example, is significantly different from the patterns of participation that describes integration in a liberal arts college or univeristy. Moreover, transfer students are apt to enter an environment in which classmates who started in the institution as freshman have already been substantially socialized. As suggested, however, many colleges have considerable experience with these groups of students; and, in most colleges, the number of such students is small, they do not compete with the

predominant behavior patterns on campus. This may not be the case in the future.

The overall decline in the number of traditional age college-bound students is forcing many colleges to seek new clienteles and to reach out to non-traditional markets. Hence, many liberal arts colleges are actively recruiting adult students; others are implementing new majors in more vocationally oriented areas. A number of colleges have initiated programs that involve high school students in college classes, while others are reaching to further geographical areas through more aggressive use of extention programs. In responding to the threat of shrinking enrollments, colleges have tried to expand their clientele, expand their program, or do some combination of both.

These analyses suggest that these different groups may respond to campus social and academic opportunities in different ways. Colleges, then, need to prepare for the different social and academic needs of the new students they attract and for the different manner in which these students may relate to the institution. For example, this study suggests that as colleges recruit older students, they will find these students less inclined to participate in campus based social and extracurricular activities, and that this tendency will be most marked in a university setting. The Carnegie Commission (1980) predicts that one of the largest applicant pools in the next 20 years will be ethnic minorities, many of whom will come from lower SES backgrounds. Results of this study suggest that students from lower SES tended to have less social contact with faculty and other students, but be more apt to engage in conversations with faculty on academic matters, particularly if they have high achievement needs. As the range of students expands, the range of programming that will draw students into the life of the campus will also need to expand. Results of this study suggest particular activities that might be attractive to students of different descriptions. At the same time, different preferences for involvement in campus life might contribute to a loss of cohesion in a campus environemnt, perhaps even to increased tension on campus as student groups find fewer of their preferences for social and academic activities in common.

Beyond a concern for keeping students enrolled is the commitment of most college educators to provide for the personal and social development of students. The importance of college as a socializing organization has been widely documented (Clark and Trow, 1966; Feldman and Newcomb, 1969; Wheeler, 1966). Student behaviors, attitudes, and values are influenced through the interaction of students with the important agents of socialization within the campus environment-- peers, faculty, administrators. This interaction occurs largely through student participaiton in formal and informal campus activities. Pascarella (1980) and Rossi (1966) both argue that individuals change in the direction of reducing the differences between themselves and the press of the interpersonal environment with which they interact. The groups with which the student interacts most are an important influence on the nature of the students' socialization and, in turn, on many aspects of their personal, non-intellective development during college. The patterns of students' social involvement in campus life observed in the present study suggest that colleges of different types may have different long term impacts on students' personal development through the socialization experiences they provide. These differences in socialization can be

explained in part by the personal characteristics of the students. However, even with those removed, college types differ in their net climate, or the overall interpersonal environment which the student encounters.

The amount of variance explained by the significant interaction terms is, for individual interactions, probably too small to have practical consequences for college administrators. However, these interactions do suggest some interesting patters of compensation and accentuation among variables. These patterns provide special pointers to student groups that may require special programatic efforts to draw them into campus life, for example, younger students with high affiliation needs in two year college settings or older students majoring in applied areas in a liberal arts college. The results of the significant interactions also tend to support and refine earlier claims about the special impacts of some college types. Most notably, a number of authors have argued that liberal arts colleges have a "particular potency" in encouraging student development (Jacob, 1957; Feldman and Newcomb, 1969). In the present study, liberal arts colleges appeared to foster particularly high levels of student-faculty contact on intellectual issues and, presumably, the positive outcomes of such contact (see Pascarella, 1980). However, the study also indicated that not all students would benefit equally from this exposure.

Question 4: (concerning the extent to which differences in students' levels of social and academic involvement accounted for differences in retention rate across institutional types)

The results of these analyses suggested that, with differences in student background traits held constant, type of institution attended was still significantly related to level of persistence. Moreover, such institutional differences in persistence rates were not entirely explanable by differences in levels of social and academic integration and involvement across institutions. Such results suggest that differential persistence rates across institutional types may be attributable to factors other than just the extent to which a student becomes involved in the social and academic systems of an institution. Thus, it would seem that differences in the characteristics of students enrolled (such differences being manifest along different dimensons than those measured in this study) may be significant factors in accounting for varying persistence/withdrawal rates.

Additonal Analyses

A series of additional analyses was conducted to identify those specific dimensions of social/academic integration significantly associated with institutional commitment and commitment to the goal of graduation from college. These analyses indicated some interesting differences across institutions in the patterns of social/academic involvement influencing commitment to the institution and commitment to the goal of graduation from college.

Not surprisingly, expected academic achievement had a significant direct influence (i.e. a statistically significant regression weight) on either institutional commitment or goal commitment for three of the four samples. Beyond this one variable, however, there was considerable

variability across institutions in those aspects of social/academic involvement influencing commitments.

For the residential university sample involvement in various honors-type programs positively influenced commitment to the particular institution while participation in special skills programs had a positive, unique influence on commitment to college graduation. Thus, it would seem that provison for these types of programs has potentially significant implications for positively influencing student commitment to the institution and to the goal of college graduation. Beyond these two academic involvement measures, however, various dimensions of involvement in the social system of the institution appeared to extensively influence institutional and goal commitment. Dating frequency, friends on campus and number of weekends spent on campus all positively influenced commitment to he institution. Living on-campus (versus living off-campus), number of weekends spent on-campus and involvement in informal social activity positively influenced commitment to college graduation.

The pattern of variables influencing institutional and goal commitments for the liberal arts sample focused much more on a student's relationships with faculty. Frequency of informal, non-class contact with faculty focusing on intellectual or academic topics had a significant positive regression weight with both institutional and goal commitment. Thus, while informal contact with faculty did not have a significant direct influence on persistence (as shown by the lack of a significant regression weight in Table 5), it nevertheless appears to have an important indirect influence through its significant positive effect on institutional commitment. Institutional commitment, in turn, has a direct positive effect on persistence in the liberal arts sample.

It is perhaps not surprising that extent of informal contact with faculty is significantly related to institutional and goal commitment. It is typically at small, private liberal arts colleges that such contact is not only the most extensive, but also has been show to have the greatest influence on student attitudes, values and general development. (In the present study the liberal arts sample had significantly, $p < .01$, more non-class contact with faculty than in the pooled samples from the other three institutional types.

In the two-year commuter sample participation in honors programs was (as with the residential university sample) significantly and positively associated with institutional commitment. However, as shown in Table 5, institutional commitment for two-year commuter students was not significantly associated with persistence. Extent of involvement in academic/intellectual activity was positively associated with goal commitment, but, in contrast to the results from the residential and liberal arts samples, involvement in informal social activity had a negative association with commitment to college graduation. Thus, it would appear that certain patterns of social involvement function to influence commitment to graduation quite differently in four-year residential or liberal arts institutions, than in two-year commuter schools. Perhaps such a finding suggests the extent to which the academic life of the commuter student is so clearly divorced from his or her social/cultural experience.

References

Astin, A. Productivity of undergraduate institutions, Science, 1962, 136, 129-135.

Astin, A. Undergraduate achievement and institutional excellence, Science. 1968, 161, 661-668.

Baird, L. L., The Practical utility of measures of college environment, Review of Educational Research, 1974, 44, 3, 307-329.

Baumgart, N., and Johnstone, J. Attrition at an Australian university: A case study, Journal of Higher Education, 1977, 48, 553-570.

Bean, J. Dropouts and turnover: The synthesis and test of a causal model of student attrition, Research in Higher Education, 1980, 12, 155-187.

Bean, J. Student attrition, intentions and confidence: Interaction effects in a path model, paper presented at American Educational Research Association Convention, Los Angeles: April, 1981.

Carnegie Council on Policy Studies in Higher Education, Three thousand-futures, San Francisco: Jossey-Bass, 1980.

Centra, J., and Rock, D. College environments and student achievement, American Educational Research Journal, 1971, 8, 623-624.

Chickering, A. Commuting versus resident students: Overcoming educational inequalities of living off-campus, San Francisco: Jossey-Bass, 1974.

Chickering, A. Education and Identity, San Francisco: Jossey-Bass, 1969.

Clark, B. R.. and M. Trow, Determinants of College Student Subcultures, University of California, Berkeley: Center for the Study of Higher Education, 1960.

Cope, R., and Hannah, W. Revolving college doors: The causes and consequences of dropping out, stopping out and transferring. New York: John Wiley & Sons, 1975.

Eckland, B. College dropouts who come back, Harvard Education Review, 1964, 34, 402-420.

Eddy, E., The college influence on student character, Washington, D.C.: American Council on Education, 1959.

Feldman, K. A. and T. M. Newcomb, The impact of college on students, San Francisco: Jossey-Bass, 1969.

Hutcheson, S. M. and D. W. Chapman, Patterns of student interactions in Clark-Trow subgroups Research in Higher Education, 11, 3, 1979, 233-247.

Iffert, R. Retention and withdrawal of college students, Washington, D.C.: U.S. Government Printing Office, 1958.

Jacob, P., Changing values in college: An exploratory study of the impact of college teaching, New York: Harper, 1957.

Lenning, O. T., K. Sauer and P. E. Beal, Student retention strategies, AAHE-ERIC/Higher Education Research report No. 8, Washington, D.C.: American Association for Higher Education, 1980.

Marsh, I. College dropouts--A review, Personnel and Guidance Journal, 1966, 44, 475-481.

Munro, B. Dropouts from higher education: Path analysis of a national sample, American Educational Research Journal, 1981, 81, 133-141.

Munro, B. Dropouts from nursing education, Nursing Research, 1980, 29, 371-377.

Pantages, T., and Creedon, C. Studies of college attrition: 1950-1975, Review of Educational Research, 1978, 48, 49-101.

Pascarella, E. T., Student-faculty informal contact and college outcomes, Review of Educational Research, 1980, 50, 4, 545-595.

Pascarella, E., and Terenzini, P. Interaction effects in Spady's and Tinto's conceptual models of college dropout, Sociology of Education, 1979, 52, 197-210.

Pascarella, E., and Terenzini, P. Patterns of student-faculty informal interaction beyond the classroom and voluntary freshman attrition, Journal of Higher Education, 1977, 48, 540-552.

Pascarella, E., and Terenzini, P. Predicting persistence and voluntary dropout decisions from a theoretical model, Journal of Higher Education, 1980, 51, 60-75.

Rock, D., Centra, J., and Linn, R. Relationships between college characteristics and student achievement, American Educational Research Journal, 1970, 7, 109-121.

Rossi, P., Research strategies in measuring peer group influences in T. Newcomb & E. Wilson (eds.,), College peer groups, Chicago: Aldine, 1966.

Rossman, J. An experimental study of faculty advising, Personnel and Guidance Journal, 1967, 46, 160-164.

Spady, W. Dropouts from higher education: An interdisciplinary review and synthesis, Interchange, 1970, 1, 64-85.

Stern, G. People in context: Measuring person-environment congruence in education and industry, New York: Wiley-Interscience, 1970.

Summerskill, J., Dropouts from college, in N. Sanford (Ed.), The American College, John Wiley & Sons, 1962.

Thistlethwaite, D., and Wheeler, N. Effects of teacher and peer subcultures upon student aspirations, Journal of Educational Psychology, 1966, 57, 35-47.

Tinto, V. Dropout from higher education: A theoretical synthesis of recent research, Review of Educational Research, 1975, 45, 89-125.

Tinto, V. Student disengagement revisted: Some thoughts on the limits of theory and practice in student attrition, paper presented at American Educational Research Association Convention, Los Angeles: April, 1981.

Terenzini, P., and Pascarella, E. The relation of students' precollege characteristics and freshman year experience to voluntary attrition, Research in Higher Education, 1978, 9, 347-366.

Terenzini, P., and Pascarella, E. Voluntary freshman attrition and patterns of social and academic integration in a university: A test of a conceptual model, Research in Higher Education, 1977, 6, 25-43.

Trent, J., and Medsker, L. Beyond High School, San Francisco: Jossey-Bass, 1968.

Walberg, H. and Rasher S. Improving regression models, Journal of Educational Statistics,, 1976, 1, 253-277.

Valiga, M. J., Institutional variability in the causes of college attrition, paper presented at the Annual Forum of the Association for Institutional Research, Atlanta, April, 1980.

Wheeler, S., "The structure of formally organized socialization settings", in O. Brim & S. Wheeler (eds.), Socialization after childhood: Two essays, New York: Wiley, 1966.

Wilson, E., "The entering student: Attributes and agents of change", in T. Newcombe & E. Wilson (eds.), College peer groups, Chicago: Aldine, 1966.

Table 1

DISTRIBUTION OF PERSISTERS AND WITHDRAWALS FOR EACH INSTITUTIONAL TYPE[a]

Institutional Type	Freshman Persisters	Freshman Withdrawals	Total
Four-Year Residential Universities	926 (84.3%)	173 (15.7%)	1099
Private Liberal Arts	352 (88.9%)	44 (11.1%)	396
Two-Year Commuter Colleges	317 (75.5%)	105 (24.9%)	422
Four-Year Commuter Universities	334 (81.6%)	75 (18.4%)	409
Total Sample	1929 (82.9%)	397 (17.1%)	2326

[a] Based on weighted sample estimates, numbers in parenthesis are percentages.

Table 2

MEANS, STANDARD DEVIATIONS AND UNIVARIATE F-RATIOS FOR ALL INDEPENDENT VARIABLES

Variables	Residential University					Liberal Arts College					Two-Year Commuter					Four-Year Commuter				
	Persisters		Withdrawals			Persisters		Withdrawals			Persisters		Withdrawals			Persisters		Withdrawals		
	M	SD	M	SD	F[a]	M	SD	M	SD	F[a]	M	SD	M	SD	F[a]	M	SD	M	SD	F[a]
Sex	1.38	.49	1.35	.51	.63	1.54	.50	1.50	.51	.26	1.43	.50	1.32	.47	4.07	1.37	.49	1.37	.49	.02
Age	1.07	.34	1.14	.49	6.15	1.24	.69	1.16	.37	.52	1.25	.68	1.26	.62	.03	1.06	.30	1.08	.27	.22
Secondary School Grades[b]	2.64	1.31	3.04	1.52	13.43	2.90	1.41	3.52	1.41	7.22	3.33	1.65	3.35	1.62	.01	2.72	1.40	3.18	1.31	6.50
Socio-economic Status	8.35	6.30	7.57	6.17	2.41	5.43	4.86	5.24	4.66	.06	3.90	3.66	4.55	3.93	2.37	5.78	4.39	5.58	4.96	.13
Achievement Needs[b]	14.39	2.07	14.66	2.07	4.79	14.61	2.12	14.37	2.28	.62	14.23	2.14	14.43	2.11	1.80	14.34	2.12	14.08	2.23	1.42
Affiliation Needs[b]	13.32	1.87	13.38	1.86	2.52	13.31	1.84	13.43	1.70	.38	13.58	1.87	13.07	1.97	7.16	13.44	1.82	13.60	1.30	1.14
Liberal Arts	.41	.49	.32	.47	5.73	.37	.48	.52	.51	3.48	.27	.44	.27	.44	.00	.34	.48	.44	.50	2.21
Applied	.38	.48	.44	.50	2.24	.46	.50	.25	.44	6.77	.44	.49	.50	.50	.83	.37	.49	.30	.46	1.24
First Semester G.P.A.	2.87	.65	2.67	.65	12.35	2.74	.69	2.66	.71	.45	2.85	.69	2.83	.65	.01	2.81	.65	2.73	.61	1.06
Expected Second Semester G.P.A.	3.03	.50	2.85	.54	17.47	2.97	.58	2.78	.65	3.79	2.99	.59	2.97	.58	.01	2.95	.47	2.72	.56	14.28
Academic/Intellectual Activity	28.38	18.74	25.35	18.03	3.84	22.04	18.18	17.82	9.46	2.17	25.43	25.88	22.80	27.08	.79	22.04	17.83	22.37	18.48	.04
Honors Program Participation[b]	3.86	.40	3.89	.35	4.42	3.90	.36	3.95	.22	.13	3.94	.24	3.95	.21	.00	3.94	.29	3.94	.28	.04
Special Skills Program Participation[b]	5.79	.52	5.67	.68	18.10	5.36	.83	5.27	.76	.36	5.77	.52	5.73	.56	.02	5.73	.63	5.66	.71	.73
Faculty Contact: Academic Topics[c]	1.99	.87	2.18	.83	10.70	1.80	.72	2.01	.74	3.13	1.96	.75	1.79	.76	4.08	2.10	.69	2.08	.69	.11
Peer Conversations: Academic Topics[c]	1.06	.36	1.05	.35	.21	1.11	.43	1.11	.46	.01	1.25	.53	1.14	.45	3.74	1.15	.41	1.15	.46	.07

Table 2 (continued)
Means, Standard Deviations And Univariate F-Ratios For All Independent Variables

Variables	Residential University					Liberal Arts College					Two-Year Commuter					Four-Year Commuter				
	Persisters		Withdrawals			Persisters		Withdrawals			Persisters		Withdrawals			Persisters		Withdrawals		
	M	SD	M	SD	F[a]	M	SD	M	SD	F[a]	M	SD	M	SD	F[a]	M	SD	M	SD	F[a]
Career Planning Program Participation[c]	1.92	.27	1.97	.18	4.64	1.92	.27	1.98	.14	1.98	1.93	.25	1.94	.24	.20	1.87	.33	1.93	.26	2.07
Residence Status	.90	.30	.75	.43	28.72	.17	.37	.16	.37	.01	.02	.14	.00	.00	2.18	.06	.24	.03	.18	1.09
Dating Frequency	2.79	1.10	2.75	1.29	.07	3.27	1.12	3.27	1.28	.00	3.24	1.18	3.41	1.13	1.63	2.99	1.05	3.45	1.06	9.93
Friends on Campus	2.23	.98	2.08	.98	3.25	2.14	.93	1.84	.77	4.14	2.33	1.12	2.14	.91	2.52	2.27	1.10	1.93	.91	6.21
Organized Extra-curricular Activity[c]	.51	.28	.61	.30	16.98	.68	.30	.83	.27	9.30	.74	.30	.77	.29	.91	.69	.31	.74	.30	1.31
Informal Social Activity[c]	.09	.13	.13	.20	14.52	.16	.23	.21	.25	1.51	.21	.26	.17	.23	2.04	.20	.26	.15	.19	2.46
Weekends Spent on Campus	.33	.22	.43	.26	25.92	.73	.33	.79	.34	.14	.93	.19	.93	.20	.00	.86	.26	.91	.20	3.17
Friendship[b]	3.14	.70	3.35	.60	12.06	3.15	.64	3.33	.56	2.79	3.17	.65	3.24	.63	.86	3.16	.63	3.16	.65	.10
Faculty Contact: Social/Personal[c]	5.02	.89	5.26	.83	16.10	4.72	1.03	4.93	.92	1.44	4.84	1.03	4.60	1.27	3.23	5.10	.82	5.13	.86	.31
Peer Conversations: Social/Personal[c]	1.02	.34	1.08	.39	4.25	1.18	.47	1.18	.44	.01	1.40	.59	1.21	.53	8.91	1.21	.45	1.21	.47	.05
Institutional Commitment[b]	4.61	1.48	6.16	1.93	144.54	4.23	1.48	4.93	1.94	45.88	4.15	1.48	4.91	1.62	20.04	4.67	1.44	4.75	1.94	30.02
Commitment to Graduation[b]	1.48	.67	1.81	.93	32.54	1.45	.65	1.74	.81	7.21	1.73	.83	2.54	1.18	59.98	1.63	.76	1.94	.91	9.31

* $p < .05$

[a] Critical F-ratio at $p < .05$: Residential University = 3.85; Liberal Arts Colleges = 3.87; Two-Year Commuter Institutions = 3.86; Four-Year Commuter Institutions = 3.86.

[b] Scored in reverse.

[c] Reciprocals used in constructing scales, thus scored in reverse.

Table 3

PARTIAL CORRELATIONS BETWEEN EACH INDEPENDENT VARIABLE AND VOLUNTARY WITHDRAWAL DECISIONS[a]

Variable	Residential University	Liberal Arts Colleges	Two-Year Commuter	Four-Year Commuter
First Semester G.P.A.	-.061*	.018	-.025	-.006
Expected Second Semester G.P.A.	-.078*	-.061	-.014	-.166*
Academic/Intellectual Activity	-.040	-.099	-.036	.016
Honors Program Participation[b]	-.016	.028	.023	-.006
Special Skills Program Participation[b]	-.059	.028	-.046	-.014
Faculty Contact: Academic Topics[c]	.079*	.114*	-.109*	-.013
Peer Conversations: Academic Topics[c]	.033	.013	-.097*	-.022
Career Planning Program Participation[b]	.064*	.073	.002	.076
Residence Status	-.146*	-.045	-.064	-.043
Dating Frequency	-.021	.022	.056	.152*
Friends on Campus	-.056	-.093	-.088	-.120
Organized Extracurricular Activity[c]	.099*	.150*	.045	.063
Informal Social Activity[c]	.104*	.075	-.048	-.095
Weekends Spent on Campus	.131*	.081	.018	.079
Friendship[b]	.102*	.082	.078	-.007
Faculty Contact: Social Personal[c]	.077*	.108*	-.080*	-.030
Peer Conversations: Social Personal[c]	.035	.016	.110*	.024
Institutional Commitment[b]	.340*	.316*	.189*	.275*
Commitment to Graduation[b]	.145*	.117*	.359*	.156*

*$p < .05$

[a]Withdrawal Coded 2, Persistence Coded 1. Influence of all student background characteristics held constant.

[b]Scored in reverse.

[c]Reciprocals used in constructing scales, thus scored in reverse.

Table 4

SETWISE REGRESSION ANALYSIS SUMMARIES

Variable Set	Residential University				Liberal Arts College				Two-Year Commuter				Four-Year Commuter			
	R^2	R^2 Increase	df	F	R^2	R^2 Increase	df	F	R^2	R^2 Increase	df	F	R^2	R^2 Increase	df	F
Background Variables	.025	.025	8/1090	3.44*	.046	.046	8/387	2.35*	.033	.033	8/413	1.75	.026	.026	8/400	1.35
Academic/Social Involvement	.089	.064	17/1073	4.36*	.098	.052	17/370	1.29	.101	.068	17/396	1.76*	.112	.086	17/383	2.20*
Institutional/Goal Commitment	.188	.099	2/1071	65.13*	.176	.078	2/368	17.72*	.217	.116	2/394	29.00*	.175	.063	2/381	14.32*
Academic/Social Involvement + Institutional/Goal Commitment Variables	.188	.163	19/1071	10.29*	.176	.130	19/368	3.06*	.217	.184	19/394	4.87*	.175	.149	19/381	3.61*
Interactions	.291	.103	20/1051	7.63*	.265	.089	10/358	4.24*	.269	.052	5/389	5.47*				
R^2 Total	.291		47/1051	9.19*	.265		37/358	3.49*	.269		32/389	4.47*	.175		27/381	3.00*

* $p < .05$

Table 5

UNSTANDARDIZED REGRESSION WEIGHTS FOR ALL MAIN EFFECTS VARIABLES

Variables	Residential University	Liberal Arts Colleges	Two-Year Commuter	Four-Year Commuter
Sex	-.087	-.020	.002	-.014
Age	.021	-.026	-.014	-.004
Secondary School Grades	.007	.021	-.002	.022
Socio-Economic Status	-.002	-.001	.009	.001
Achievement Needs[b]	.002	-.011	-.003	-.015
Affiliation Needs[b]	.002	-.003	-.028*	.011
Liberals Arts	-.016	.023	.060	.087
Applied	.030	-.078	.048	.016
First Semester G.P.A.	-.026	.015	-.027	.065
Expected Second Semester G.P.A.	-.014	-.051	.002	-.172*
Academic/Intellectual Activity	-.0001	-.0007	-.0005	.001
Honors Program Participation[b]	-.023	-.022	.024	.005
Special Skills Program Participation[b]	-.058*	.007	-.036	-.033
Faculty Contact: Academic Topics[c]	.028	.012	-.042	-.008
Peer Conversations: Academic Topics	.068	.017	-.031	.020
Career Planning Program Participation[b]	.105*	.034	.003	.035
Residence Status	-.123*	-.037	-.303	-.039
Dating Frequency	.005	.008	.013	.037*
Friends on Campus	-.0001	-.015	-.023	-.033
Organized Extracurricular Activity[c]	.041	.084	.104	.001
Informal Social Activity[c]	.099	.083	.047	.075
Weekends Spent on Campus	.029	.003	.050	.031
Friendships[b]	.037*	.014	.073*	.018
Faculty Contact: Social/Personal[c]	.006	.005	-.012	-.022
Peer Conversations: Social/Personal[c]	.011	-.063	-.102*	-.023
Institutional Commitment[b]	.067*	.055*	.023	.062*
Commitment to Graduation[b]	.035*	.014	.143*	.017

* $p < .05$

[b] Scored in reverse.

[c] Reciprocals used in constructing scales, thus scored in reverse.

Table 6

VARIANCE INCREMENTS IN THE PREDICTION OF PERSISTENCE, INSTITUTIONAL COMMITMENT AND COMMITMENT TO GRADUATION WITH COMPOSITE MEASURES OF ACADEMIC AND SOCIAL INVOLVEMENT

STEP	VARIABLE SET	Residential University			Liberal Arts College			Two-Year Commuter			Four-Year Commuter		
		PERSIST.	INSTCOM.	COMGRAD.	PERSIST.	INSTCOM.	COMGRAD.	PERSIST.	INSTCOM.	COMGRAD.	PERSIST.	INSTCOM.	COMGRAD.
1	Background Variables (N = 8)	.025*	.013	.062*	.046*	.066*	.051*	.033	.081*	.063*	.026	.053*	.104*
2	Composite Measures of Academic and Social Involvement (N = 2)	.035*	.029*	.012*	.024*	.013	.024*	.002	.033*	.002	.004	.017*	.027*
	Academic Involvement[a]	+.001[b]	+.000	+.004*	+.005	+.000	+.022*	+.000	+.031*	+.000	+.003	+.017*	+.014*
	Social Involvement[a]	+.032*	+.027*	+.006*	+.012*	+.010*	+.001	-.002	-.001	-.001	-.001	-.000	-.001
3	Institutional/Goal Commitment (N = 2)	.098*			.085*			.133*			.074*		
	Institutional Commitment[a]	+.088*			+.076*			+.004			+.053*		
	Commitment to Graduation[a]	+.003*			+.001			+.094*			+.003		
	R^2	.158*	.042*	.074*	.156*	.079*	.075*	.168*	.114*	.065*	.104*	.070*	.131*

[a] Controlling for all variables entered on the same or previous steps.

[b] Plus (+) or minus (-) indicates sign of beta weight with persistence. Coding: persistence = 1, withdrawal = 2; composite academic and social involvement scales coded in reverse.

* $p < .05$

Table 7

SIGNIFICANT INTERACTION EFFECTS FOR THREE INSTITUTIONAL TYPES

Interaction	F[a]	Equation[b]
Residential University		
1. Socioeconomic Status (SES) x Academic/Intellectual Activity (AIA)	5.14*	Y^c = .003(SES) - .002(AIA) + .0002(SES x AIA)
2. Achievement Needs (ACHN) x Residence (RES)	10.23**	Y = .0008(ACHN) + .122(RES) - .018(ACHN x RES)
3. Special Skills Program Participation (SSPP) x Liberal Arts Major (LAM)	13.49*	Y = -.033(SSPP) - .645(LAM) + .140(SSPP x LAM)
4. Friendships (FDS) x Liberal Arts Major (LAM)	4.40*	Y = .059(FDS) - .645(LAM) - .060(FDS x LAM)
5. Secondary School Grades (SSG) x Dating Frequency (DATE)	7.71**	Y = .187(SSG) + .050(DATE) - .016(SSG x DATE)
6. Commitment to Graduation (CG) x Institutional Commitment (IC)	4.83*	Y = -.091(CG) + .287(IC) + .020(CG x IC)
7. Friends on Campus (FOC) x Institutional Commitment (IC)	6.08*	Y = .108(FOC) + .287(IC) - .015(FOC x IC)
8. Commitment to Graduation (CG) x Informal Social Activity (ISA)	5.12*	Y = -.091(CG) - .169(ISA) + .161(CG x ISA)
9. First Semester Achievement (ACH) x Institutional Commitment (IC)	9.15**	Y = .096(ACH) + .287(IC) - .029(ACH x IC)
10. Institutional Commitment (IC) x Organized Extracurricular Activity (OEA).	8.76**	Y = .287(IC) - .249(OEA) + .061(IC x OEA)
11. Informal Social Activity (ISA) x Faculty Contact: Academic Topics (FCAT)	9.43**	Y = -.169(ISA) - .036(FCAT) + .317(ISA x FCAT)
12. Institutional Commitment (IC) x Honors Program Participation (HPP)	10.03**	Y = .287 (IC) + .473(HPP) - .050(IC x HPP)
13. Peer Conversations: Social Personal (PCSP) x Honors Program Participation (HPP)	8.28**	Y = 1.004(PCSP) + .473(HPP) - .253(PCSP x HPP)

Table 7 (continued)
Significant Interactions Effects For Three Institutional Types

Interaction	F[a]	Equation[b]
Liberal Arts College		
14. Institutional Commitment (IC) x Commitment to Graduation (CG)	7.15**	Y = -.158(IC) - .123(CG) + .036(IC x CG)
15. Peer Conversations: Academic Topics (PCAT) x Liberal Arts Major (LAM)	4.20*	Y = -.097(PCAT) - .267(LAM) + .191(PCAT x LAM)
Two-Year Commuter Institution		
16. Socioeconomic Status (SES) x Institutional Commitment (IC)	10.69**	Y = -.038(SES) + .021(IC) + .011(SES x IC)
17. Sex (SEX) x Commitment to Graduation (CG)	7.26**	Y = .398(SEX) + .310(CG) - .118(SEX x CG)

*$p < .05$

**$p < .01$

[a] Degrees of freedom: Residential University = 1/1051; Liberal Arts College 1/358; Two Year Commuter Institution 1/389; all main-effects and other interactions held constant.

[b] Controlling for all main effects and all other interactions; Constant: Residential University = -1.42; Liberal Arts College = 2.10; Two-Year Commuter Institution = 1.70.

[c] Voluntary Withdrawal (Coded 2) versus Persistence (Coded 1).

Table 8

Discriminant Analysis of Academic and Social Integration Across Institutional Types

Source of Variation	Partial Multivariate F of variable set	degrees of freedom	Significance level	Univeriate F at Conclusion of Analysis	Standardized Discriminant Function Coefficients Function 1	Function 2	Function 3
Personal Characteristics	19.1	8,	.001				
Sex				13.6	.09	-.44	-.20
Age				10.5	-.07	-.35	.27
SES				48.4	-.45	-.04	.11
Achievement Orientation				11.4	-.05	.44	-.04
Affiliation				6.8	-.16	.07	.17
High School GPA				10.5	.18	.14	.25
Major: Liberal Arts				9.5	.06	-.22	.46
Applied Studies				7.5	.19	-.14	.17
General Studies				0.0	.00	.00	.00
Social Integration	22.4	15,	.001				
Informal contact with faculty: Social/Personal[a]				23.4	-.36	.24	-.22
Informal contact with other students: Social/ Personal[a]				9.9	.25	.07	.09
Participation in organized student extracurricular activities[a]				55.0	.51	-.03	-.24
Participation in informal social activity[a]				16.7	.23	.24	-.36
Friendships				1.3	-.06	-.11	-.01
Average number of dates each month				13.3	.22	-.07	-.27
Number of best friends on campus				5.2	.12	.19	.05

Table 8 continued

Source of Variation	Partial Multivariate F of variable set	degrees of freedom	significance level	Univariate F at Conclusion of Analysis	Standardized Discriminant Function Coefficients function 1	function 2	function 3
Academic Integration	16.4	23,	.001				
First semester freshman GPA				1.5	-.07	.02	.09
Expected GPA for second semester freshman year				8.2	.08	-.14	:33
Academic/Intellectual Activity				9.8	-.11	.17	.33
Informal contact with faculty: Academic Issues[a]				3.06	-.08	.22	.11
Peer conversations: Academic topics[a]				1.7	.08	.10	.02
Honors program participation				5.2	-.00	-.76	-.62
Special skills program participation				7.3	-.04	.95	.48
Career planning program participation				2.2	.05	-.18	.24
Commitment	17.4	25,	.001				
Institutional commitment[b]				16.6	-.25	.06	-.27
Commitment to graduation[b]				40.7	.33	.46	.34
Group Centroids							
Universities					-.80	.00	.15
Liberal Arts Colleges					.30	-.56	-.22
Four-year Commuter Colleges					.03	.37	-.47
Two-year Colleges					.85	.12	.26

[a] These variables were entered in the analysis as recipricals, hence, the scale has been reversed, e.g., a lower score indicates a higher level of participation.

[b] These variables were reverse scaled: 1=high, 4=low

Table 9

Summary of Regression Analyses to Predict Academic and Social Integration

Dependent Variable	After Entry of Personal Characteristics R^2	F	After Entry of Institutional Types R^2	F	F of Change in R	After Entry of Interaction Terms R^2	F	F for Change in R^2
Social Integration								
Informal contact with faculty: Social/Personal[a]	.042	12.6*	.057	12.65*	12.82*	.078	5.5*	2.18*
Informal contact with other students: Social/Personal[a]	.134	44.7*	.163	41.2*	28.41*	.181	14.5*	--
Participation in organized student extracurricular activities[a]	.094	30.1*	.162	40.6*	66.25*	.173	13.7*	--
Participation in informal social activity	.135	45.0*	.168	42.5*	32.35*	.191	15.4*	2.71*
Friendships	.026	7.8*	.027	6.0*	.83	.031	2.12*	--
Average number of dates each month	.078	24.5*	.101	23.7*	20.70*	.117	8.7*	--
Number of best friends on campus	.016	4.8*	.022	4.8*	5.00*	.041	2.8*	--
Academic Integration								
First semester freshman GPA	.001	1.9	.008	1.63	5.68*	.026	1.74**	1.79*
Expected GPA for second semester of freshman year	.019	5.6*	.030	6.57*	9.15*	.046	3.18*	--
Academic/Intellectual activity	.024	7.1*	.037	8.0*	11.10*	.053	3.66*	--
Informal contact with faculty: Academic Issues[a]	.048	14.5*	.068	15.3*	17.53*	.085	6.06*	--
Peer conversations: Academic Topics[a]	.055	16.8*	.069	15.5*	12.26*	.090	6.45*	2.23*
Honors program participation	.008	2.3**	.017	3.55*	7.50*	.035	2.34*	--

Table 9 continued

Dependent Variable	After Entry of Personal Characteristics R^2	F	After Entry of Institutional Types R^2	F	F of Change in R	After Entry of Interaction Terms R^2	F	F for Change in R^2
Special skills program participation	.012	3.4*	.023	4.89*	9.15*	.039	2.68	--
Career planning program participation	.004	1.1	.008	1.59	3.24**	.023	1.81*	1.48

[a] For all analyses, degrees of freedom after entry of personal characteristics are 8,2315; after entry of institutional type are 11,2311; and after the entry of the interaction terms 35,2288.

* = $p > .01$; ** = $> .05$

[b] The Fratio reported here is the univariate F at the conclusion of the analysis

[c] Significance of change in R^2 was computed only for sets of interaction terms accounting for an additional 2 percent of the variance.

Table 10

B Weights Associated With Significant Interaction Effects of Personal Characteristics X Institutional Types to Predict Academic and Social Integration

Dependent Variable	Personal Characteristic	x Institutional Type (B Weights) University	4 Year Commuter College	Liberal Arts College	2 Year Colleges
Social Integration					
Conversations with faculty: social	SES	-.02	.01	-.002	-.004
	age	.22	.00	.09	-.17
Conversations with peers: social/personal	applied	-.04	-.06	.007	-.03
	age	.25	.04	.22	.15
	achievement orientation	-.003	.01	.03	.04
Participation in informal social activities[a]	affiliation needs	.02	.03	.02	.03
	applied	-.05	-.02	.03	-.05
	age	.12	.01	.15	.11
First semester freshman GPA	Lib arts	-.13	.01	-.30	.12

[a] Variable computed as a reciprical, hence scale is reversed.

Table 11

REGRESSION ANALYSIS SUMMARIES (POLLED SAMPLE-
DEPENDENT MEASURE: PERSISTENCE/WITHDRAWAL)

STEP	VARIABLE SET	R^2	R^2 SETWISE INCREASE	DF	F	R^2 UNIQUE INCREASE	DF	F
1.	Background Variables	.01378*	.01378	8/2317	4.05*	.01378	8/2317	4.05*
2.	Institutional Type	.03235*	.01857	3/2314	14.81*	.01393	3/2295	12.62*
3.	Academic/Social Involvement and Commitment Variables	.15485*	.12250	19/2295	17.51*	.12250	19/2295	17.51*

*$p < .05$

Table 12

Means, Standard Deviations, and Partial Correlations[a]

Variable	Residential University				Liberal Arts College				Two-Year Commuter				Four-Year Commuter			
	M	SD	r_1	r_2	M	SD	r_1	r_2	M	SD	r_1	r_2	M	SD	r_1	r_2
Background Variables																
Sex	1.38	.49			1.53	.50			1.40	.49			1.37	.49		
Age	1.08	.37			1.23	.66			1.25	.66			1.06	.29		
Secondary School Grades[b]	2.70	1.35			2.96	1.42			3.34	1.64			2.81	1.39		
Socio-economic Status	8.23	6.28			5.41	4.83			4.07	3.74			5.74	4.50		
Achievement Needs[b]	14.43	1.87			14.58	2.13			14.28	2.13			14.29	2.14		
Affiliation Needs[b]	13.33	2.07			13.32	1.82			13.45	1.91			13.47	1.82		
Liberal Arts	.40	.50			.39	.49			.27	.44			.36	.48		
Applied	.39	.49			.44	.50			.46	.50			.36	.48		
Social/Academic Involvement																
First Semester G.P.A.	2.84	.66	-.01	-.07*	2.73	.70	.06	-.05	2.85	.68	-.16*	.02	2.79	.64	.00	-.02
Expected Second Semester G.P.A.	3.00	.51	-.07*	-.12*	2.95	.60	.01	-.06	2.99	.58	-.19*	.03	2.91	.49	-.03	-.12*
Academic/Intellectual Activity	27.90	18.65	-.04	-.06*	21.59	17.50	-.10*	-.11*	24.77	26.18	.01	-.07	22.10	17.93	-.06	-.11*
Honors Program Participation[b]	3.86	.40	-.05	.04	3.91	.35	.07	.07	3.94	.23	.18*	.01	3.94	.30	.00	-.03
Special Skills Program Participatory[b]	5.77	.54	.02	.04	5.36	.82	-.02	.03	5.76	.53	.05	.00	5.72	.65	.12*	.07
Faculty Contact: Academic Topics[c]	2.02	.71	.05	-.03	1.82	.73	.16*	.16*	1.92	.76	.06	.06	2.09	.69	.07	.02
Peer Conversations: Academic Topics[c]	1.06	.36	.01	.05	1.11	.43	.00	.02	1.22	.51	-.04	-.02	1.15	.42	-.00	-.03

Table 12 (continued)
Means, Standard Deviations, and Partial Correlations[a]

Variable	Residential University				Liberal Arts College				Two-Year Commuter				Four-Year Commuter			
	M	SD	r_1	r_2	M	SD	r_1	r_2	M	SD	r_1	r_2	M	SD	r_1	r_2
Career Planning Program Participation	1.93	.72	-.01	-.03	1.92	.26	.07	.06	1.93	.99	.08	.05	1.88	.32	.14*	.04
Residence Status	.87	.33	-.03	.02	.17	.37	.07	-.04	.02	.12	.07	-.02	.06	.23	-.03	-.07
Dating Frequency	2.77	.42	-.08*	-.03	3.27	1.13	-.01	.00	3.28	1.17	-.04	-.04	3.08	1.15	.05	.10*
Friends on Campus	2.20	.99	-.14*	-.07*	2.11	.92	-.04	-.03	2.28	1.08	-.01	.05	2.21	1.08	.00	.03
Organized Extracurricular Activity[c]	.53	.29	.07*	.07*	.70	.30	.10*	.03	.75	.30	.10*	-.00	.70	.31	-.01	-.06
Informal Social Activity[c]	.10	.14	.03	.09*	.17	.23	.03	.10*	.20	.25	-.05	-.13*	.19	.25	-.05	-.13*
Weekends Spent on Campus[c]	.34	.24	.09*	.11*	.94	1.36	.01	.02	.92	.20	.01	-.04	.87	.25	.17*	.07
Friendships[b]	3.17	.69	.08*	-.01	3.17	.63	.14*	-.00	3.19	.65	-.01	.05	3.17	.63	.00	-.09
Faculty Contact: Social/Personal	5.06	.87	.05	.01	4.74	1.02	.12*	.01	4.78	1.10	.02	-.04	5.18	.83	.06	-.08
Peer Conversations: Social/Personal	1.03	.35	.05	.06*	1.18	.46	.05	.00	1.35	.58	-.09	-.04	1.21	.45	-.02	-.07

[a] All background variables held constant, r_1 = partial correlation with Institutional Commitment, r_2 = partial correlation with Commitment to Graduation, both dependent variables coded in reverse.

[b] Coded in reverse.

[c] Transformed to reciprocals, thus coded in reverse.

* $p < .05$

Table 13

Unstandardized Regression Weights and R^2 for all Analyses[a]

Variable	Residential University		Liberal Arts College		Two-Year Commuter		Four-Year Commuter	
	Inst. Com.	Goal Com.	Inst. Com.	Goal Com.	Inst. Com.	Goal Com.	Inst. Com.	Goal Com.
Background Variables								
Sex	-.112	-.061	.079	-.185*	-.233	-.094	.132	-.030
Age	-.412*	.011	-.391*	.131*	.114	.127	-.004	-.006
Secondary School Grades[b]	.017	.024	.121	.045	.041	.018	-.045	.067*
Socio-economic Status	.008	-.007	.063*	.008	.025	.012	.026	-.009
Achievement Needs[b]	.019	.043*	-.046	.006	.088*	.095*	.076*	.069*
Affiliation Needs[b]	-.010	-.013	-.071	.026	-.049	.057*	.018	.042
Liberal Arts	-.357*	-.221*	-.054	-.055	-.154	-.158	-.505*	-.374*
Applied	-.189	-.181*	-.113	-.146	.145	.115	-.654*	-.249*
Social/Academic Involvement								
First Semester G.P.A.	-.137	-.020	.155	-.023	-.219	-.035	.136	.097
Expected Second Semester G.P.A.	-.372*	-.163*	-.060	-.050	-.358*	-.044	-.129	-.249*
Academic/Intellectual Activity	-.003	-.002	-.007	-.004	-.001	-.004*	-.003	-.004
Honors Program Participation[b]	.289*	.062	.204	.058	1.143*	.158	-.066	-.092
Special Skills Program Participation[b]	-.072	.082*	-.063	.010	.074	-.021	.122	.039
Faculty Contact: Academic Topics[c]	.132	.062	.311*	.205*	.138	.167	.123	.116

Table 13 (continued)

Unstandardized Regression Weights and R^2 for all Analyses[a]

Variables	Residential University		Liberal Arts College		Two-Year Commuter		Four-Year Commuter	
	Inst. Com.	Goal Com.	Inst. Com.	Goal Com.	Inst. Com.	Goal Com.	Inst. Com.	Goal Com.
Peer Conversations: Academic Topics[c]	.289	.003	-.256	-.012	.048	.118	.007	.017
Career Planning Program Participation[b]	-.044	-.121	.199	.140	.507	.207	.464	.034
Residence Status	.098	-.242*	.400	.122	.086	-.187	.159	-.223
Dating Frequency	-.121*	-.035	.027	-.146	-.071	-.050	.044	.050
Friends on Campus	-.232*	-.039	.003	.110	-.064	-.007	.051	.143
Organized Extracurricular Activity[c]	.281	.094	.337	.095	.491	.142	-.454	-.199
Informal Social Activity[c]	-.381	.381*	-.091	.417*	-.470	-.687*	-.215	-.209
Weekends Spent on Campus[c]	.723*	.408*	-.005	-.003	.202	-.133	1.004*	.210
Friendships[b]	.061	-.060	.295*	.011	-.033	.118	-.009	-.029
Faculty Contact: Social/Personal[c]	-.034	-.003	.016	-.089	-.088	.033	.014	-.017
Peer Conversations: Social/Personal[c]	-.255	.106	.189	-.011	-.047	-.065	-.031	-.054
Constant	7.085	1.384	1.135	.926	-.028	-1.115	1.446	1.172
R^2	.070*	.116*	.132*	.115*	.184*	.109*	.109*	.171*

[a] Institutional Commitment and Commitment to Graduation coded in reverse

[b] Coded in reverse

[c] Transformed to reciprocals, thus coded in reverse

* $p < .05$

Appendix A

STUDENT INVOLVEMENT QUESTIONNAIRE

1.

Instructions: The following items describe activities in which you may have participated during this academic year. For each item, please check or specify the appropriate response. Please respond to all items.

2. Approximately how many hours did you spend each week during this academic year preparing for class assignments? (Please specify). _____ 1:22-23

3. How many books, other than those assigned for class, did you read for your own pleasure or information during this academic year? (Please specify). _____ 1:24-25

4. Approximately how many athletic events did you attend during this academic year? (Please specify). _____ 1:26-27

5. Approximately how many on-campus parties did you attend <u>each</u> <u>month</u> during this academic year? (Please specify). _____ 1:28-29

6. Approximately how many times did you go out with friends for refreshments (e.g., a beer, a soft drink, a pizza, etc.) <u>each</u> <u>month</u> during this academic year? (Please specify). _____ 1:30-31

7. How many cultural events did you attend during this academic year (e.g., lecture, concert, play)? (Please specify). _____ 1:32-33

8. What was your academic average (GPA) for the <u>first</u> semester/quarter? (Please specify). _____ 1:34-37

9. What do you expect your academic average (GPA) to be for <u>this</u> semester/quarter? (Please specify). _____ 1:38-41

During this academic year approximately how many times did you:

10. Have dinner or refreshments at a faculty members' home? _____ 1:42-43

11. Go out for refreshments with a faculty member? _____ 1:44-45

12. Have a meal on campus with a faculty member? _____ 1:46-47

13. Students often talk with a variety of people. Using the answer code listed below, please indicate about how many conversations you've had during <u>this academic year</u> with the people identified regarding the following topics (list only those conversations that were 10 minutes or more and list only those conversations with faculty that took place outside of class).

Answer Code for Question 13

0= Have Had no Conversations
1= One to Three Conversations
2= Four to Six Conversations
3= Seven to Nine Conversations
4= More than Nine Conversations

(Place a 0,1,2,3 or 4 in each response category for Question 13.)

Number of Conversations about:	Academic Advisor	Faculty (excluding Acad. Advisor)	Parents	
a. Educational plans, problems, or progress	___	___	___	1:48-50
b. Academic or intellectual issues	___	___	___	1:51-53
c. Informal, conversational matters only	___	___	___	1:54-56
d. Career plans or opportunities	___	___	___	1:57-59
e. A personal problem	___	___	___	1:60-62
f. A campus or social issue	___	___	___	1:63-65

Project CHOICE, School of Education, The University of Michigan, Ann Arbor, Michigan 48109

14. For the following list of student activities, place a check mark in the box for those in which you participate. For those that you check, please indicate the approximate hours you participated each week during this academic year in the space to the right of the box.

a.	Athletics - Intercollegiate	☐ ____	1:66-68
b.	Athletics - Intramural	☐ ____	1:69-71
c.	College Publications (e.g. Newspaper, year book)	☐ ____	1:72-74
d.	College Productions or Performances (e.g. theater, glee club, band)	☐ ____	1:75-77
e.	Fraternities, Sororities, Co-ops	☐ ____	1:78-80
f.	Professional or Departmental Clubs (e.g. Business Club, Economics Club, Debate Club)	☐ ____	2:22-24
g.	Hobbies or Social Clubs (e.g. Radio Club, Hiking Club, Dance Club)	☐ ____	2:25-27
h.	Religious Organizations (e.g. Newman Student Association, Christian Fellowship, Hillel House)	☐ ____	2:28-30
i.	Residence Hall Activities (e.g. Hall Council, Social activities, judicial board)	☐ ____	2:31-33
j.	Student Government	☐ ____	2:34-36
k.	Others - please specify:		
	_____	____	2:37-39
	_____	____	2:40-42
	_____	____	2:43-45

15. Students often talk with students about a variety of topics. Using the answer code listed below, please indicate about how many conversations you've had with students each month during this academic year regarding the following topics (list only those conversations that were 10 minutes or more).

Answer Code for Question 15

0= Have had no Conversations
1= One to Three Conversations
2= Four to Six Conversations
3= More than Six Conversations

(Place a 0,1,2, or 3 in each response category for question 15.)

Conversations about:	Number of conversations each month with students	
a.	Educational plans, problems, or progress	____ 2:46
b.	Academic or intellectual issues	____ 2:47
c.	Informal, conversational matters only	____ 2:48
d.	Career plans or opportunities	____ 2:49
e.	A personal problem	____ 2:50
f.	A campus or social issue	____ 2:51

16. Some colleges provide special programs (honors seminars, accelerated classes, tutorial programs, reading skills classes) for students who want to strengthen their academic skills. Please indicate the ones in which you participated during the first semester.

a.	Honors seminar	___Yes ___No	2:52
b.	Accelerated classes	___Yes ___No	2:53
c.	Tutorial programs	___Yes ___No	2:54
d.	Reading skills classes	___Yes ___No	2:55
e.	Study skills classes	___Yes ___No	2:56
f.	Career planning programs	___Yes ___No	2:57
g.	Others - please specify	_____	2:58-59
		_____	2:60-61
		_____	

17. a) If you had a serious personal problem, is there a student friend on campus in whom you would confide? ___Yes ___No 2:62

b) Is there a faculty member in whom you would confide? ___Yes ___No 2:63

18. Is there a person at this college that you date on a regular basis? ___Yes ___No 2:64

19. Do you spend time with college friends over college vacations? ___Yes ___No 2:65

20. How often do you go out on dates <u>each</u> <u>month</u>? (Check one)

___ None; ___ Once; ___ Two or Three times; ___ More than Three;

___ Already Married 2:66

21. Of your 5 best friends, how many attend this college? (Please specify). _____ 2:67

For the following items, check the <u>Like</u> space if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant. Check the <u>Dislike</u> space if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

		<u>Like</u>	<u>Dislike</u>	
22.	Setting difficult goals for myself.	___	___	2:68
23.	Having other people let me alone.	___	___	2:69
24.	Working for someone who will accept nothing less than the best that's in me.	___	___	2:70
25.	Going to the park or beach with a crowd.	___	___	2:71
26.	Setting higher standards for myself than anyone else.	___	___	2:72
27.	Leading an active social life.	___	___	2:73
28.	Competing with others for a prize or goal.	___	___	2:74
29.	Meeting a lot of people.	___	___	2:75
30.	Taking examinations.	___	___	2:76
31.	Belonging to a social club.	___	___	2:77
32.	Working on tasks so difficult I can hardly do them.	___	___	2:78

For the following items, check the Like space if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant. Check the Dislike space if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

		Like	Dislike	
33.	Going to parties where I'm expected to mix with the whole crowd.	___	___	2:79
34.	Doing something very difficult in order to prove I can do it.	___	___	2:80
35.	Having lots of friends who come to stay with us for several days during the year.	___	___	3:22
36.	Choosing difficult tasks in preference to easy ones.	___	___	3:23
37.	Going to the park or beach only at times when no one else is likely to be there.	___	___	3:24
38.	Sacrificing everything else in order to achieve something outstanding.	___	___	3:25
39.	Going on a vacation to a place where there are lots of people.	___	___	3:26
40.	Picking out some hard task for myself and doing it.	___	___	3:27
41.	Inviting a lot of people home for a snack or party.	___	___	3:28

42. How important is it for you to graduate from college? (check one) 3:29

a. extremely important ___
b. very important ___
c. somewhat important ___
d. not at all important ___

43. How important is it that you graduate from this college? (check one) 3:30

a. extremely important ___
b. very important ___
c. somewhat important ___
d. not at all important ___

44. How sure are you that you made the right choice in attending this college? (check one) 3:31

a. definitely right choice ___
b. probably right choice ___
c. not sure ___
d. probably wrong choice ___
e. definitely wrong choice ___

45. Will you return to this college next fall? (check one) 3:32

a. definitely <u>will</u> return ___
b. probably <u>will</u> return ___
c. not sure ___
d. probably <u>will not</u> return ___
e. definitely <u>will not</u> return ___

46. Listed below are reasons why a student might not return to college next fall. If you answered c, d, or e to question 45, check those reasons why you might not return. (Check one answer for each reason).

		Major reason	Moderate reason	Minor reason	Not a reason	
Academic						
a. Low grades	a.	—	—	—	—	3:33
b. Found courses too difficult	b.	—	—	—	—	3:34
c. Inadequate study techniques or habits	c.	—	—	—	—	3:35
d. Needed a temporary break from studies	d.	—	—	—	—	3:36
e. Major or courses not available at this school	e.	—	—	—	—	3:37
f. Dissatisfaction with major department	f.	—	—	—	—	3:38
g. Unsure about my choice of major	g.	—	—	—	—	3:39
h. Course work not challenging	h.	—	—	—	—	3:40
Employment						
i. Scheduling conflict between job and studies	i.	—	—	—	—	3:41
j. Accepted a job	j.	—	—	—	—	3:42
k. Went into military service	k.	—	—	—	—	3:43
l. Couldn't find a job while at school	l.	—	—	—	—	3:44
Financial						
m. Not enough money to go to school	m.	—	—	—	—	3:45
n. Applied, but could not obtain financial aid	n.	—	—	—	—	3:46
o. Financial aid was not sufficient	o.	—	—	—	—	3:47
p. Child care too costly	p.	—	—	—	—	3:48
q. This school was too expensive	q.	—	—	—	—	3:49
Personal Circumstances						
r. Found study too time-consuming	r.	—	—	—	—	3:50
s. Home responsibilities were too great	s.	—	—	—	—	3:51
t. Illness, personal or family	t.	—	—	—	—	3:52
u. Personal problems	u.	—	—	—	—	3:53
v. Fulfilled my personal education goals	v.	—	—	—	—	3:54
w. Marital situation changed my educational plans	w.	—	—	—	—	3:55
x. Moved out of the area	x.	—	—	—	—	3:56
y. Child care not available	y.	—	—	—	—	3:57

47. How important were the following in your decision to attend college? (Please specify).

		extremely important	very important	somewhat important	not at all important	did not discuss or receive	
a. parents	a.	—	—	—	—	—	3:58
b. high school teachers	b.	—	—	—	—	—	3:59
c. high school or college friends	c.	—	—	—	—	—	3:60
d. college representatives	d.	—	—	—	—	—	3:61
e. relatives	e.	—	—	—	—	—	3:62
f. high school counselor	f.	—	—	—	—	—	3:63

APPENDIX B

COOPERATING SAMPLE INSTITUTIONS

Institution	Location
Four-Year Universities (Primarily Residential)	
American University	Washington, D.C.
Ball State University	Muncie, Indiana
Ohio State University	Athens, Ohio
University of South Dakota	Vermillion, South Dakota
Four-Year Private Liberal Arts Colleges (Mixed Residential)	
Iona College	New Rochelle, New York
Ramapo College	Mahwah, New Jersey
Four-Year Universities (Primarily Commuter)	
California State University at Long Beach	Long Beach, California
Indiana State University at Evansville	Evansville, Indiana
Two-Year Colleges (Primarily Commuter)	
Austin Community College	Austin, Minnesota
Joliet Junior College	Joliet, Illinois
Southside Virginia Community College	Keysville, Virginia